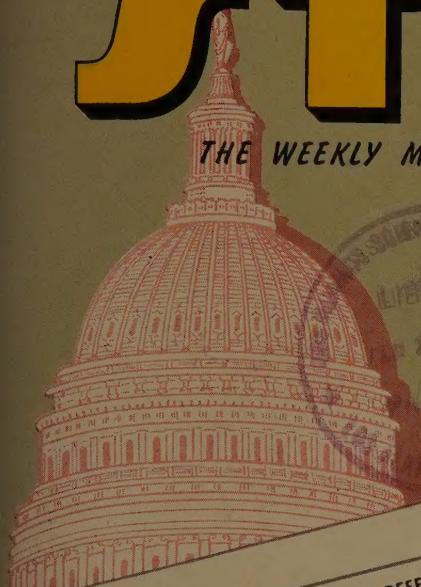


# STEEL

THE WEEKLY MAGAZINE OF METALWORKING



DEPARTMENT OF DEFENSE  
NEGOTIATED CONTRACT

The rights and obligations of the parties to this contract shall be subject to and governed by the Schedule and the General Provisions. To the extent of any inconsistency between the Schedule or the General Provisions, and any specifications or other provisions which are made a part of this contract by reference or otherwise, the Schedule and the General Provisions shall control. To the extent of any inconsistency between the Schedule and the General Provisions, the Schedule shall control.

is:  500 or more,  less than 500.

IN WITNESS WHEREOF, the parties hereto have executed this contract as of the day and year first

WITNESSES

NOTE.—  
but cert  
names

DEPARTMENT OF THE

THE UNITED STATES OF AMERICA  
By *Uncle Sam*

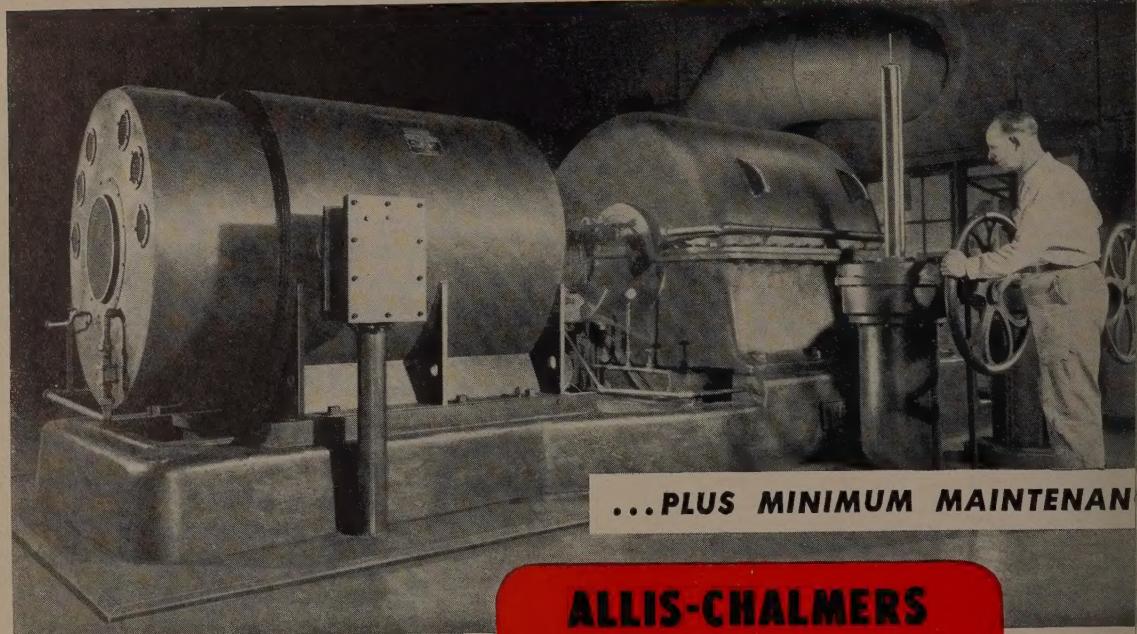
(CONTRACTING OFFICE)

## IS THE GOVERNMENT A GOOD CUSTOMER?

Complaints mount about government buying procedures. Rising defense orders show need for co-operation — page 54

- ✓ A BUSINESS BAROMETER RISES  
Supply Houses See High Sales, p. 43
- ✓ DIAMOND GRINDING ON CARBIDE TIPS  
Right Wheel Cuts Consumption, p. 72

# YOU CAN HAVE Size... AND Safety TOO



1250-hp, 3575-rpm motor driving compressor.

...PLUS MINIMUM MAINTENANCE

## ALLIS-CHALMERS Tube-Type TEFC MOTORS

**A few years ago**, explosion-proof motors were limited to small sizes — because there was no practical way to cool large totally-enclosed fan-cooled motors. Allis-Chalmers ended that limitation with the introduction of *tube-type* air-to-air heat exchanger construction in 1946.

Tube-type construction makes both large sizes and minimum maintenance possible because it provides:

- 1. Full internal air circulation** plus *circumferential tube distribution* . . . to assure efficient, even cooling of motor.
- 2. Complete enclosure** . . . to protect stator core and other electrical parts from both dirt and corrosion.
- 3. Self-cleaning action** . . . result of generous flow of outside air through smooth, straight heat exchanger tubes.

### RATINGS AVAILABLE

Both standard and explosion-proof TEFC motors are built with *tube-type* construction in ratings from 40 hp at 600 rpm to several thousand horsepower. Ratings up to 800 hp at 3600 rpm are available with Underwriters' labels.

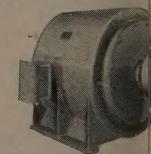
### PROVED IN OPERATION

In sizes from 250 to 2500 hp alone, purchases of these *tube-type* motors total more than 215,000 hp. For more information about these motors that have been proved in operation indoors and out, call in your nearby A-C representative or write for Bulletins 51B7149 (*it's new*) and 05B7150. Allis-Chalmers, Milwaukee 1, Wis.

A-3669



Ratings up to 800  
3600 rpm.



Construction of large  
ratings.

# ALLIS-CHALMERS



# Tool Steel Topics



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

## Which chisel has the better design?

Both these chisels, used in pneumatic chipping hammers, are made from shock-resisting tool steel (Bethlehem Omega). One of them consistently gives long service life, while the other is subject to breakage—due directly to its design.

Can you pick out the better design? Look at them carefully. It's the one on the right with the tapered shank.

You still see a lot of chisels designed like the one at the left, that's so susceptible to breakage. Even with the fillet between the round and octagon sections, this chisel is subject to fatigue-failures at the change of section. Stresses become concentrated there, causing premature fractures.

Shank failures are virtually unknown in chisels of the improved, tapered-shank design. The gradual taper prevents any dangerous concentration of stresses.

The comparison of these two chisels helps to explain why it takes more than just good tool steel to get the best performance out of tools and dies. It takes good tool design . . . correct heat-treatment . . . the right grinding technique . . . and proper application. But of course it takes the right grade of good tool steel, too!



**TOOLMAKER AT WORK**—As this progressive die nears completion, the toolmaker checks dimensions carefully. The die is used to blank, punch and form lawnmower parts from 3/16-in. steel strip. It is made from Lehigh H, a high-carbon, high-chromium grade, and hardened to Rockwell C 60. When placed in service the die turned out about 30,000 pieces between grinds, operating in a 200-ton press.

## mega halts coupling breakage

ga tool steel plays a vital role in theing of blast holes at the Scrub Oaks Oxford Mines in the historic iron ore of Northern New Jersey. In drilling s from 35 to 125 ft deep, rods of hollow drill steel are joined by pat couplings developed by Ralph Zarita, drill-steel-shop foreman at Oaks mine.

hen this method of drilling long was first tried, the frequent break- of couplings was discouraging. Our man learned of the trouble and sold on Omega. This shock-resisting e did the trick. Coupling failures reduced to about 1 in 500; and hasn't been one case of stripped ds.

mega is outstanding for chisels, and es a swell job on other cold-shock : knockout pins, pawls, punches, ing dies, clutch pins, shear blades, shafts, and machine parts subject

to slam-bang shocks. Omega is a tool steel engineered to take the heaviest shocks in its stride. Its typical analysis:

C	Mn	Si	Mo	Va
.60	.70	1.85	.50	.25



It takes a really tough tool steel to take the shock and stress involved in coupling together rods of rock-drill steel. The coupling at left is unused. The one at the right has been used in drilling 1700 ft of blast hole in hard iron ore. The outside wearing surfaces have been worn down by the abrasive rock.

## BETHLEHEM TOOL STEEL ENGINEER SAYS:



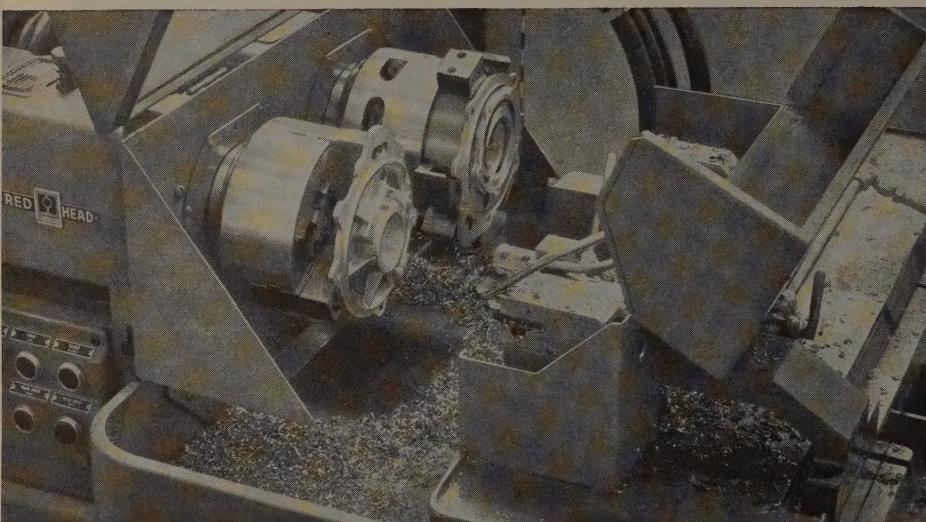
*Air-hardening steels should be quenched uniformly*

What are the advantages of uniform quenching? First, a minimum of dimensional change or distortion; and sec- ond, a minimum of undesirable residual quenching stresses.

Here are some helpful points to remember when quenching air-hardening steels:

- Place the tool on a coarse-mesh screen to permit circulation of air on all sides of the tool.
- Turn over the tool at intervals to im- prove cooling-uniformity.
- Use a fan or a blast of dry air over the sections which cool most slowly. (Caution: Too much air will cause additional non-uniformity.)
- Sections of the tool which cool too rapidly can be wrapped in wire mesh to retard cooling.
- If one portion of the tool turns black long before other portions, you can be sure that it's not cooling uniformly.

# 13 surfaces borized in 3 operations on 2 Heald Bore-Matics



The 12 surfaces indicated were precision borized on the Heald 221 Bore-Matic shown at the left station for finishing each side of work.

Here's another example of how Heald machines make fast work of a complicated, multi-surface borizing job. The parts — aluminum die-cast pump casings — are first bored, faced, turned and chamfered on 12 different surfaces with the two-station Model 221 Bore-Matic shown above. A bridged-over quill for the boring operations allows the boring tool to remain fixed while the facing tools are indexed laterally. One station is used for each side of the work.

After part has been finished on this machine, a bronze bushing is pressed in and work is transferred to the Model 121 Bore-Matic shown at the right. Here the bushing is precision bored by a single tool on the machine table.

Remember — when it comes to precision finishing, it pays to come to Heald.

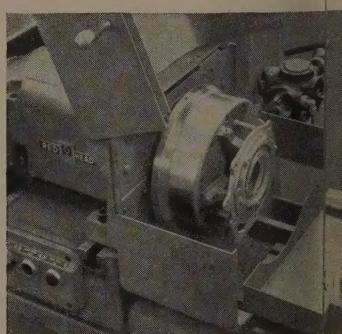
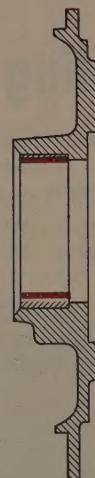


Case Study

No. 2233-96 in

PRECISION

PRODUCTION



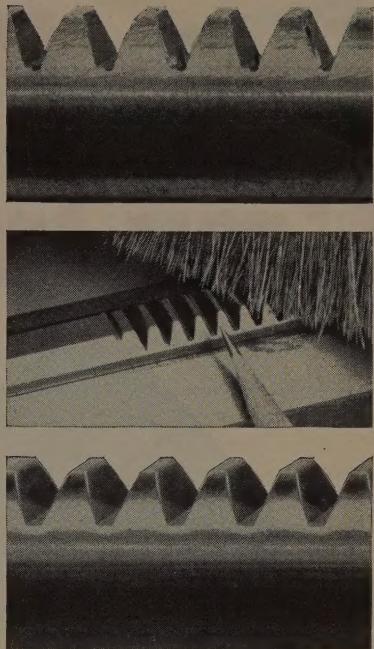
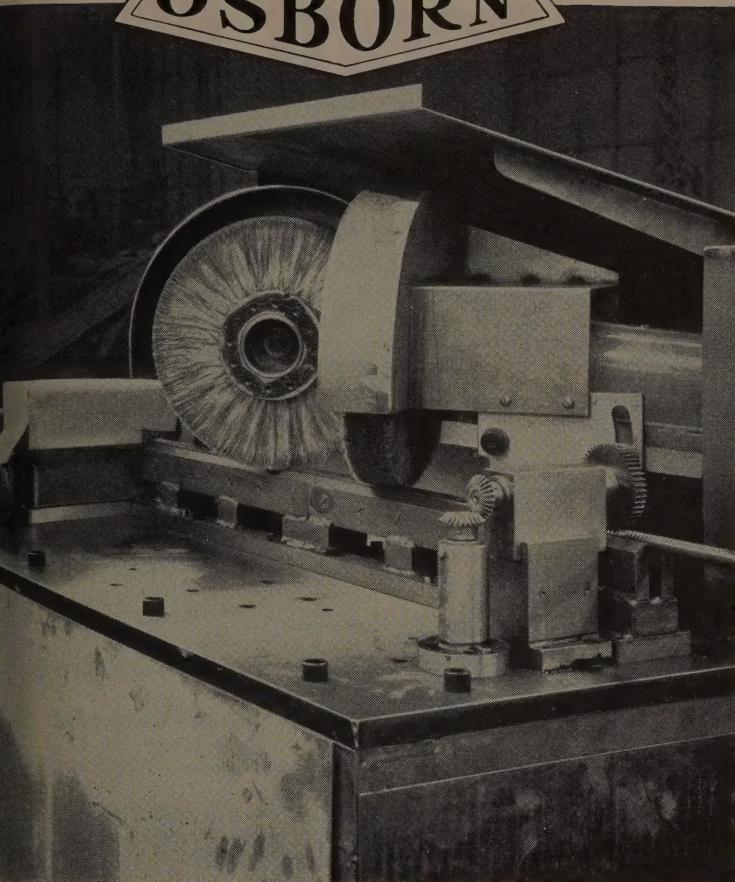
INTERNAL AND ROTARY SURFACE GRINDING MACHINES AND BORE

THE HEALD MACHINE COMPANY

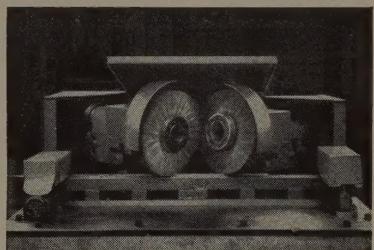
WORCESTER 6, MASSACHUSETTS

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# OSBORN



**BEFORE AND AFTER.** Top view shows closeup of rack teeth with light burrs and rough surface before brushing by new "push-button" method. Center view shows closeup of rack in machine after completion of brushing. Bottom view shows teeth after brushing. Note uniform surfaces and smooth finish on all teeth.



**HOW IT'S DONE.** Two rotating Osborn power brushes, engage rack teeth at angles as shown. At push of button, rack drives through machine at about 5 ft. per minute. When the rack completes passage, the drive reverses and sends it back in the other direction. On return travel of part, the direction of brush rotation is reversed to contact surfaces on the opposite side of rack. This gives both sides of teeth uniform brushing.

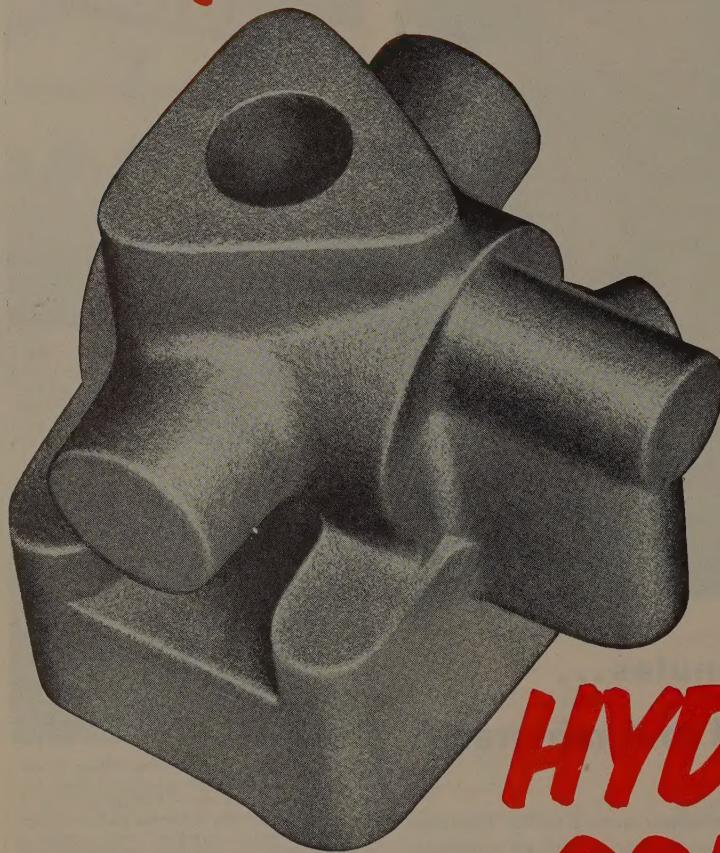


**WHAT'S YOUR PROBLEM?** The nearby Osborn Brushing Analyst is experienced in working with machine designers and methods engineers to solve problems with the latest power brushing techniques. Feel free to call him for help!

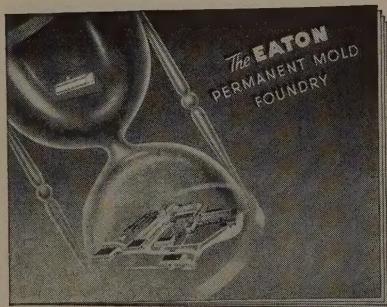
# Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

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STUDY THE FACTS!

**ZINC**  
with **Luster-on®**  
**IS SUPERIOR TO**  
**CADMIUM** for most  
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Preconceived notions that cadmium plating just naturally offers better protection than zinc are contrary to the true facts. Simply because cadmium is freer again is no reason for re-converting to it. Cadmium is still and always will be far more costly than zinc. When the zinc is passivated in Luster-on conversion treatment it is far superior to cadmium for all but extremely specific applications. These are basically (1) a marine atmosphere and (2) a bearing surface.

FACT NO. 1

ZINC plus LUSTER-ON is DEFINITELY SUPERIOR TO CADMIUM IN AN INDUSTRIAL ATMOSPHERE.

FACT NO. 2

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Editorial, Business Staffs—16. Advertising Index—167. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

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# Behind the Scenes...

## Daffynition

In the current issue of *Machine Design*, which as you probably know comes out of our same print shop, there's a cutie that we're going to steal because it may strike your sense of humor as it did ours. It seems that a co-ed, taking a course in machine design, was asked to describe a well-known pair of machine parts and came up with this classic answer: "A bolt is a thing like a stick of hard metal such as iron with a square bunch on one end and a lot of scratching wound around the other end. A nut is just like a bolt only opposite, being a hole in a little square bunch of iron sawed off short, with wrinkles around inside the hole". Oh, brother!

## Up To Here In Records

Globe Wernicke and others please note: Associate editor Sam Baker has just come up with some very encouraging figures for makers of filing cabinets. General Services Administration chief Jesse Larson estimates that federal records are now being accumulated at the rate of 3,200,000 cubic feet a year—enough to fill 100,000 filing cabinets! The GSA is making a thorough study of the situation and hopes to get federal agencies to carry out recommendations for records retirement. Just wait—one of the smart p.r. boys is going to cook up a big bonfire party up on Capitol Hill one of these days, and the Republicans can whoop and holler while all the old pink forms with three carbons and the yellow forms in triplicate, etc. etc. are piled a hundred feet high and burned to a crisp.

## Worth Waiting For

If by any chance you still haven't received your copy of the Specifications Handbook, we can only say it'll be along very shortly. As you will see when your copy arrives it is an intricate binding job with the tabbed index and that's what delayed delivery for several days. But we're sure you'll agree it is well worth waiting for!

## Sharp Idea

The Imperial Knife Co. is located in Providence, Rhode Island on Blount Street, but the natives pronounce it

"blunt". "That," says Felix Mirand, president of the company, "is no name for the business address of a company that turns out the sharpest knives in the world". And so Mr. M. has filed a petition to change the name of the street to "Imperial Place" and wish him well.

## Midwinter Letdown

Of course, it may be different where you live but this has really been a mild winter around here. It never fails. This is the first year in our lives that we were all set for a cold hard winter: Snow tires, the jalopy, all the storm windows early, the kids well equipped with new ice skates and a couple of sleds, and even the dogs had plenty of fresh straw in their kennel. What happens? We've had practically no snow, no ice, and the forsythia starting to bud. You can't win.

## Puzzled?

Twould appear there's a little difference of opinion on the January 19 bottle cap puzzle. As Reuter, Tool Room Superintendent, Fisher Body Division and T. H. Messer, Gulf Oil Corp., point out there is no doubt that 2519 is a correct answer but with much gusto they prove that 1259 is also correct. We're convinced.

Also that Sam had to travel 96 miles to catch up with Al at the head of the army (Feb. 2). O. A. Day, George Frederick, L. D. Rice, and number of others seem to agree.

Now for a new one: Sam was commander of a sizable group of men and decided to march them in a parade. He formed them 10 abreast, but noticed the rear rank contained only 9 men. Being the orderly sort, arranged them 9 abreast but found that there were only 8 men in the rear rank. He then tried 8, 7, 6, 5, 4, 3, and 2 abreast but every time there was always one man short in the rear rank. Al then appeared on the scene and everyone was happy but the question is how many men was Sam originally trying to march in the parade? The first correct answer to reach ol' Shrdlu will get an extra copy of the Specifications Handbook for free.

Shrdlu

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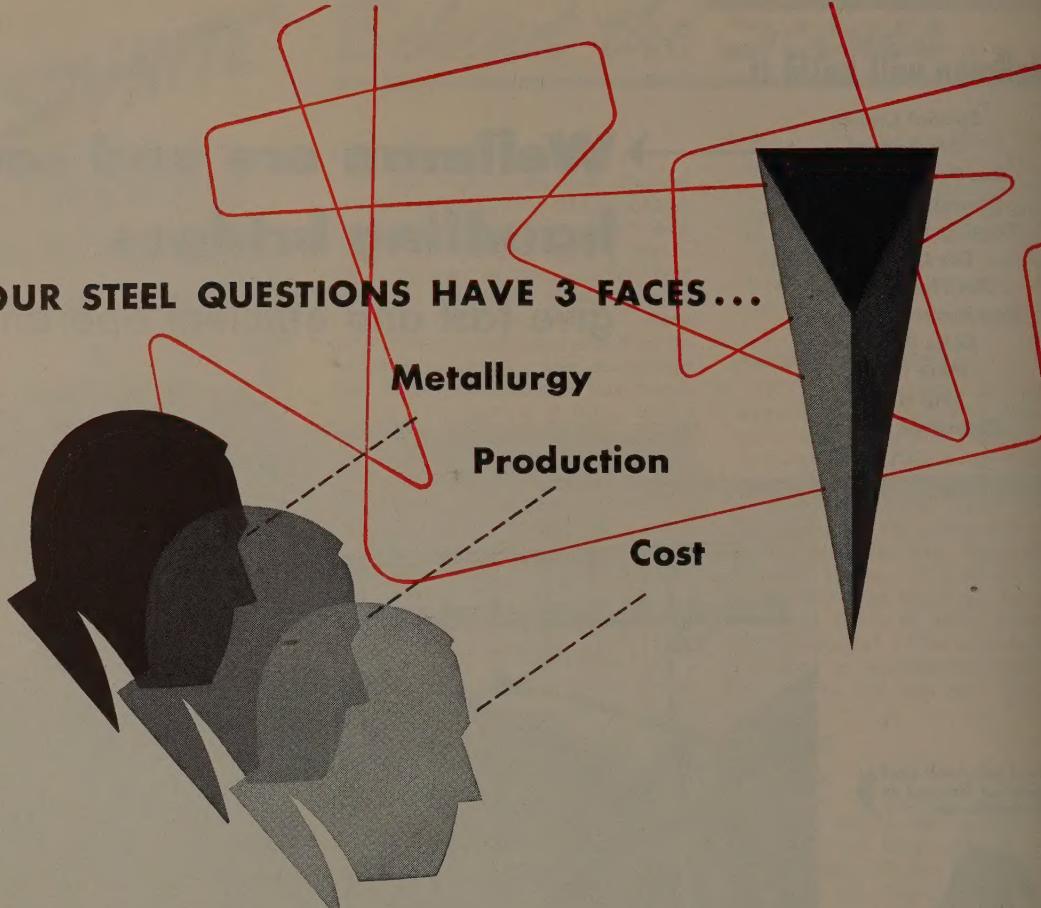
*Wellman Williams  
e Coal Bucket used with  
e bridges.*



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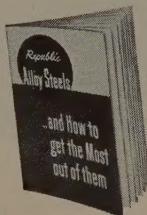
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**Metallurgy**

**Production**

**Cost**

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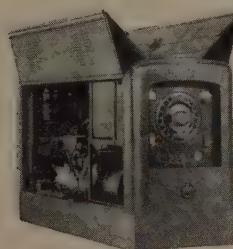


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## soaking pit cover through . . .

### H & S REDUCERS

• The above photograph shows a soaking pit cover crane designed and built by Salem Engineering Company. Two Horsburgh & Scott Helical Speed Reducers are used on each crane...the lift drive handles a cover weighing about 28 tons and operates at a speed of 6' per minute...the traverse drive moves the crane at a speed of 88' per minute. Many of these cranes have been operating very satisfactorily for twelve to fifteen years...actual tribute to complete engineering design.

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Send note on Company Letterhead for Speed Reducer Catalog 46

## LETTERS TO THE EDITORS

### Foreign Extrusion Process No



As a new subscriber to your magazine I am pleased to tell you how much I have enjoyed STEEL. The make-up provides for easy reading on the particular subjects that we are interested in. The entire approach is very forward up to date.

In your issue of Oct. 27, 1952, p. 100 there appeared an article, "A New Foreign Extrusion Process." This is a subject that we are following very closely but did not know of your article several days ago. May we have a copy of that article?

H. W. Pfahler  
pre  
Pfahler Mfg.  
Mt. Vernon,

• Sent.—ED.

### The Facts Are Available

Congratulations on a fine job in preparing your annual issue of STEEL. I believe we put this issue to good use.

As market analyst of National Motor Bearing Co., I am particularly interested in the section "1953 Metalworking & Figures." I am wondering whether we would be very convenient for me to have reprints of this section on file in our library where it would be available to our engineers and research men.

C. S. L. market  
National Motor Bearing Co.  
Redwood City, Calif.

• Reprints of the 1953 Metalworking & Figures are now available from our Readers' Service Department.

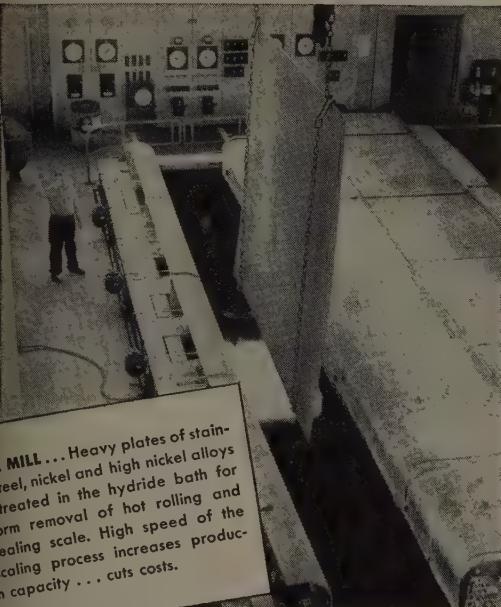
### Delivery Dates Do Matter



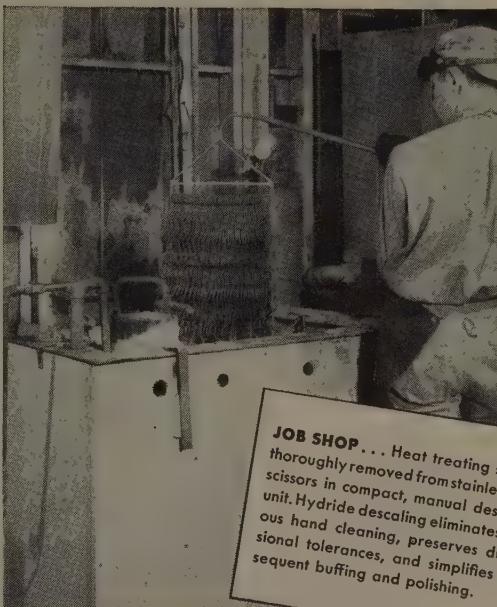
In your Jan. 12 issue on p. 31 we have published a table titled "Delivery Dates for Components." As a manufacturer of fasteners we would take issue with the lead time of 0-6 weeks. We also the outlook which is indicated improvement.

It is true that we do not manufacture bolts and nuts which are mentioned in the text on the same page, but we do produce a wide range of cold-drawn fasteners. Generally speaking, our deliveries are 8-10 weeks, and the lit-

NO SECTION TOO BIG...NO PART TOO SMALL



STEEL MILL...Heavy plates of stainless steel, nickel and high nickel alloys are treated in the hydride bath for uniform removal of hot rolling and annealing scale. High speed of the descaling process increases production capacity...cuts costs.



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### OUTSTANDING ADVANTAGES OF THE SODIUM HYDRIDE PROCESS

- HIGH-SPEED OPERATION—Descales in shortest practicable time cycle...can be adapted to manual, conveyorized or continuous operation.
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- UNIFORM DESCALING—On all surfaces without need for special racking procedures.
- USES LOW-COST EQUIPMENT—(Carbon Steel Tanks). NO HYDROGEN EMBRITTLEMENT.

E. I. du Pont de Nemours & Co. (Inc.)  
Electrochemicals Department  
Wilmington 98, Delaware

Please send me more information on the Du Pont Hydride Descaling Process: advantages, applications, equipment used. I am interested in cleaning \_\_\_\_\_ products.

Name \_\_\_\_\_ Position \_\_\_\_\_

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**DU PONT**  
Sodium hydride process  
for positive descaling



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

# LETTERS

Concluded from preceding page

tion in the foreseeable future not indicate any improvement.

If all users of fasteners were to low the lead time you indicate, we many others are going to be cons in "hot water" when we are forced to quote much longer deliveries than you indicate.

V. L. Br  
vice president  
Milford Rivet & Machi  
Milford,

• We queried many users and n of fasteners and the delivery p quoted is the average of the respo But, we pointed out in the table "exceptions are to be anticip especially when the items involve not standard.—ED.

## Biting the Feeding Hand

I was rather startled to observe your article "European Competition Strengthens as Korean Boom Fades" (Dec. 8, p. 76) that we have had for the solution to our unemployment problems within hand's reach, and we not know it. Gosh, these evil Italian unemployment laws!

May I congratulate you on this effort of really hard American thinking applied to the rest of the world's problems? Unfortunately no hint is given as to the method by which fired employees could be helped to keep body and soul together until they get an opportunity for a new job. Just a trifling matter of detail. Some government plan please. And you would supply the money!

L.  
The Italian E  
Milan

• We have supplied plenty.—ED.

## Practical Blast Furnace Practice

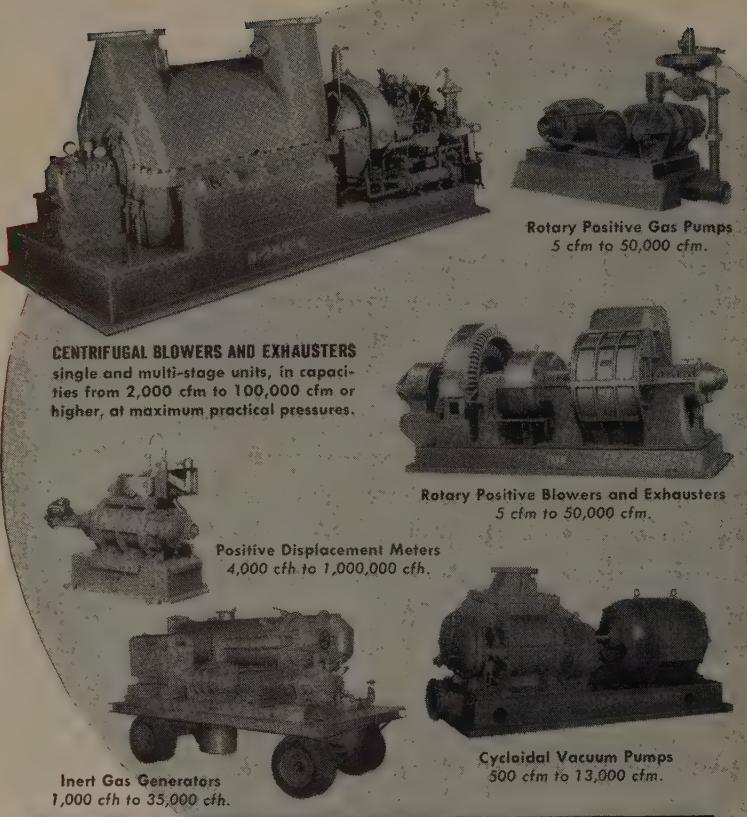
The reprint "Blast Furnace Practice" by Charles E. Agnew, is being used recently as a text in our blast furnace practice class.

Although the text is rather technical, very good use has been made of applying local practices. The question has arisen in the class concerning the background of Mr. Agnew. Has he been an operating man or has he always been a consultant or theoretical man?

This question does not mean to me any reflection on Mr. Agnew's methods in any manner whatsoever; in the contrary, because there have been many favorable comments and recommendations among the blast furnace men attending this course.

B.  
training  
Armeo Steel  
Middlebury

• Mr. Agnew comes from a family of blast furnace men dating back to his grandfather who was the first to mine Mesabi ore at the Sharpsville furnace. Included in Mr. Agnew's practical experience are such jobs as superintendent of blast furnaces for Alan Wood Steel Co., superintendent of the Wickwire furnaces for Colorado Fuel & Iron Co., and a job as superintendent at the Carter Furnaces for Barium Steel Co.—ED.



## WE Specialize IN YOUR PROBLEMS OF MOVING GAS OR AIR!

You may need to move a thimbleful of gas . . . or create a cyclone of whirling air. Whatever your problem, we've probably met something close to it, in experience of almost a century of building such equipment.

Another reason why we know so much about this job is that it's all we do. Our customers range from the "giants of industry" to the neighborhood plant, both of whose production depends upon continuous, reliable, economical performance of air and gas handling units. Because we build the exclusive *dual-ability* line of Rotary Positive and Centrifugal Units, in a wide range of sizes, we offer a *dual choice* which permits completely unbiased recommendations.

So—if you have a problem today—or anticipate one a year or five years from now, we suggest you call upon the facilities of R-C Specialists. Write for bulletins on any specific equipment.

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Specialists  
in Handling  
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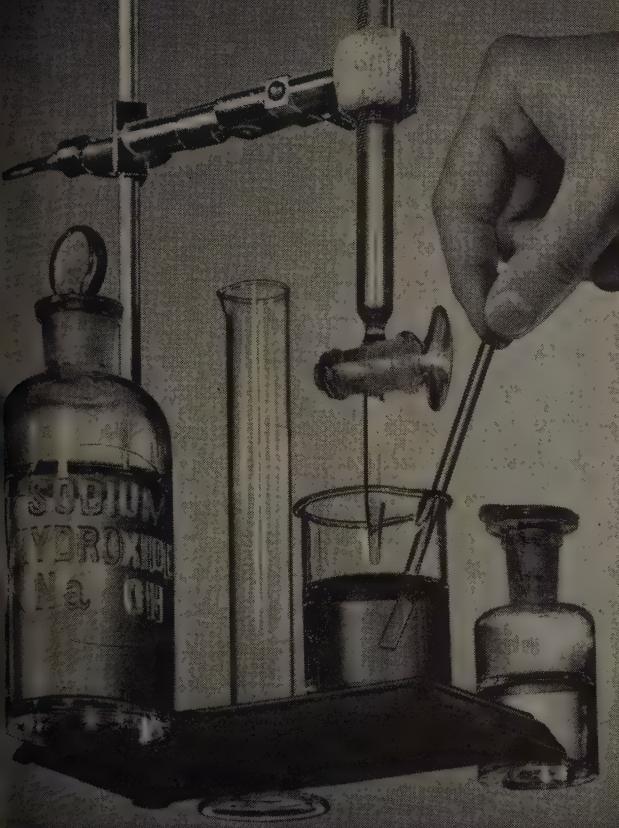


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**IMPORTED  
PALM OIL**  
Free fatty acid  
may vary as  
much as 10%

**ALL-AMERICAN  
PALMOSHIELD**

Specify desired  
acid content,  
and get it  
within  $\frac{1}{2}\%$



## Why take a chance . . . ?

For the first time in cold rolling operations you can have a lubricant that is tailor-made for your own needs.

For Palmoshield, the all-American replacement for palm oil, can be produced with the free fatty acid content you need within  $\frac{1}{2}\%$  ( $\pm\frac{1}{2}\%$ ). And, Palmoshield can be applied direct, in solution, or with proportioning pumps.

## Scientifically Controlled

Since Palmoshield is a scientific product man-made from domestic materials, it is subject to exact chemical control. When you specify the free fatty acid content you desire, you are assured that this percentage will not change from shipment to shipment or when stored under normal conditions.

## Replaces Palm Oil

Palmoshield looks, feels and acts like palm oil; requires absolutely no changes in mill operation. Yet it is a domestic lubricant made from freely available domestic materials. Users are not dependent upon overseas shipment from foreign controlled sources.

## Increases Production

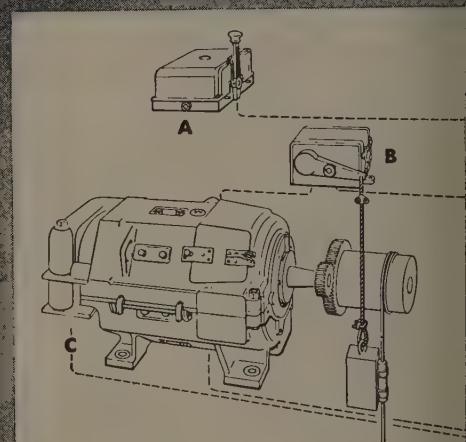
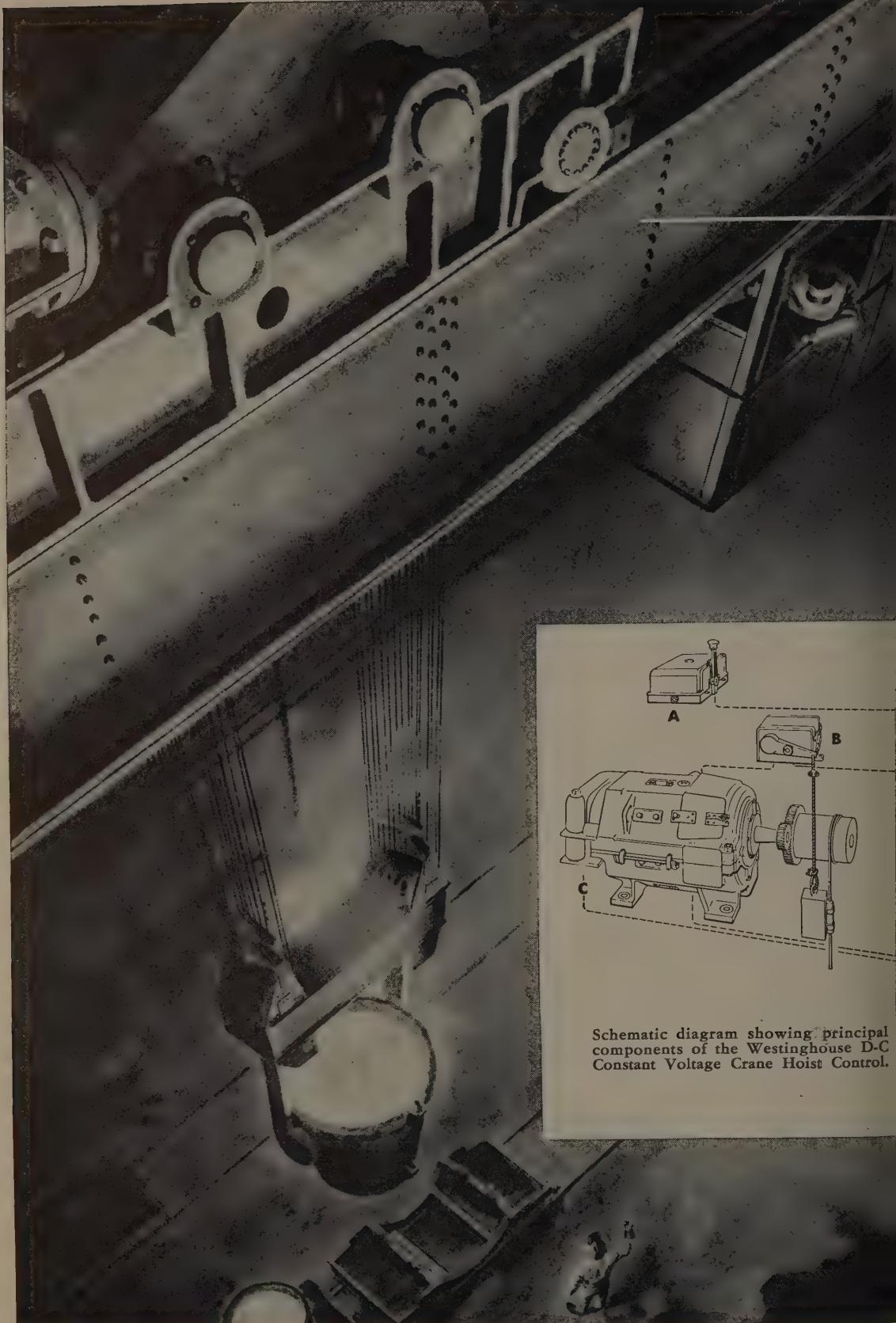
During the past year production record after production record has been set by users of Palmoshield. In one company during a test run of 20 consecutive shifts production was stepped up 15%. Already nearly two-thirds of the major tin plate mills in this country and Canada are taking advantage of this tailor-made product.

Palmoshield is available for immediate shipment in 55 gallon drums and tank car lots. For full information, and for specialized research assistance, write The Ironsides Company, 270 W. Mound Street, Columbus, Ohio.

SPECIAL LUBRICANTS and PRESERVATIVES



**IRONSIDES  
PALMOSHIELD**



Schematic diagram showing principal components of the Westinghouse D-C Constant Voltage Crane Hoist Control.

# MILL RATED muscle for heavy hoisting

A mill crane hoist control must have the stamina to withstand ceaseless beatings. It must be built of components that are mill rated . . . that keep functioning regardless of exposure to dust, dirt, heat, cold and round-the-clock hard service.

The Westinghouse D-C Constant Voltage Crane Control meets these requirements. It is built to stand up to the daily abuse found in most steel

operations. Heavy-duty, mill-type electrical equipment is used throughout. The Type M contactors and series-wound, 600-series, d-c motor

are mill rated. Dependable operation is further assured by the basic simplicity of the control system.

## OPERATING CHARACTERISTICS ARE COMPLETE AND FLEXIBLE

**Loads Slip Into Place** due to proper proportioning of speed increments between master switch points and selection of correct resistor connections.

**Slow-Speed Hoisting Is Available** with empty hook. In lowering, suitable kickoff torque is obtained with careful resistor design enabling the motor to reach steady-state speed quickly without overshoot.

**High Lowering Speeds Are Available** when required. The high-speed lowering point has an independent adjustment to facilitate closer control at these high speeds.

**Standard Control Panel** contains only nine contactors and four timing relays in addition to protective equipment. All are front mounted for easy accessibility. All are standard units.

**New Heavy-Duty Contactors** and a combined control system and resistor design, that prevent excessive current peaks during transitions or while plugging, prolong equipment life.

### Get this Descriptive Booklet B-5420

Full descriptive information on all components of the Westinghouse D-C Constant Voltage Crane Hoist Control is contained in this free booklet. Your Westinghouse representative has a copy for you. Or, you can get a copy by writing direct to: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-27017-A



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- AUTOMATIC WELDING FIXTURES

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**ALL GREASE LIFE IS LIMITED.** The best known greases dry out in time. This may be six months, seven years, or longer, depending on motor application.

**SOME MOTORS ARE USELESS WHEN GREASE DRIES OUT.** They can't be regreased, you lose production time . . . because your maintenance man is "sealed out."

**BUT GREASE LIFE NEED NOT LIMIT MOTOR LIFE.** Tri-Clad motors give long life without relubrication, plus provision for adding new grease when necessary.

**ADDED GREASE IS USEFUL GREASE.** Relubrication puts fresh grease in storage in bearing housing . . . as motor operates, grease oils migrate to bearing as needed.

**TRI-CLAD MOTOR BEARING IS EASIEST TO REGREASE.** Do it on the job, with motor running . . . no dismantling . . . no trip to a service shop.

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**THIS PRACTICAL BEARING DESIGN** is one more reason why G-E Tri-Clad motors give better service . . . added life. Order through your nearby G-E Apparatus Sales Office or authorized G-E agent or distributor. General Electric Company, Schenectady 5, N. Y.

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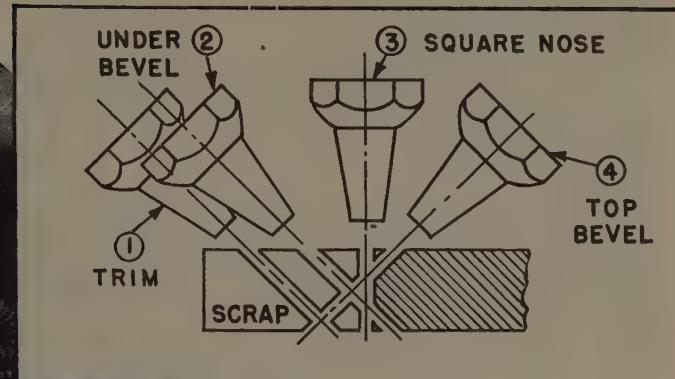
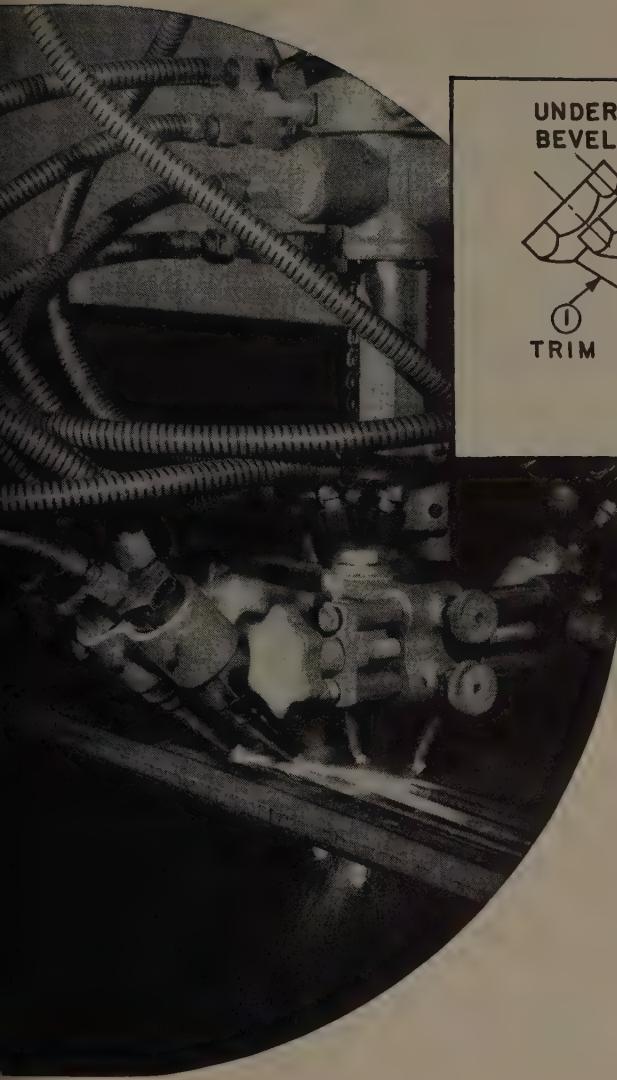
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Linde's oxygen-cutting methods are simple and flexible. They are economical and easy to use. They cut plates so smoothly and accurately that *no machining is necessary*—they are ready to weld "as cut". Rigid fit-up and contour specifications are easily met. Yet, initial investment in flame-cutting equipment is only a fraction of that

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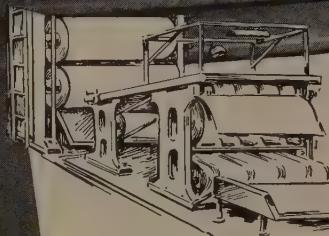
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**HOW WOULD YOU**

ACHINE THE ENDS OF THESE  
RECTANGULAR HOLES, AT AN ANGLE,

THIS  
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forged of **ARMOR STEEL**

it's easy and accurate

ith **LAPOINTE** BROACHING!

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MACHINE with 72-inch stroke.

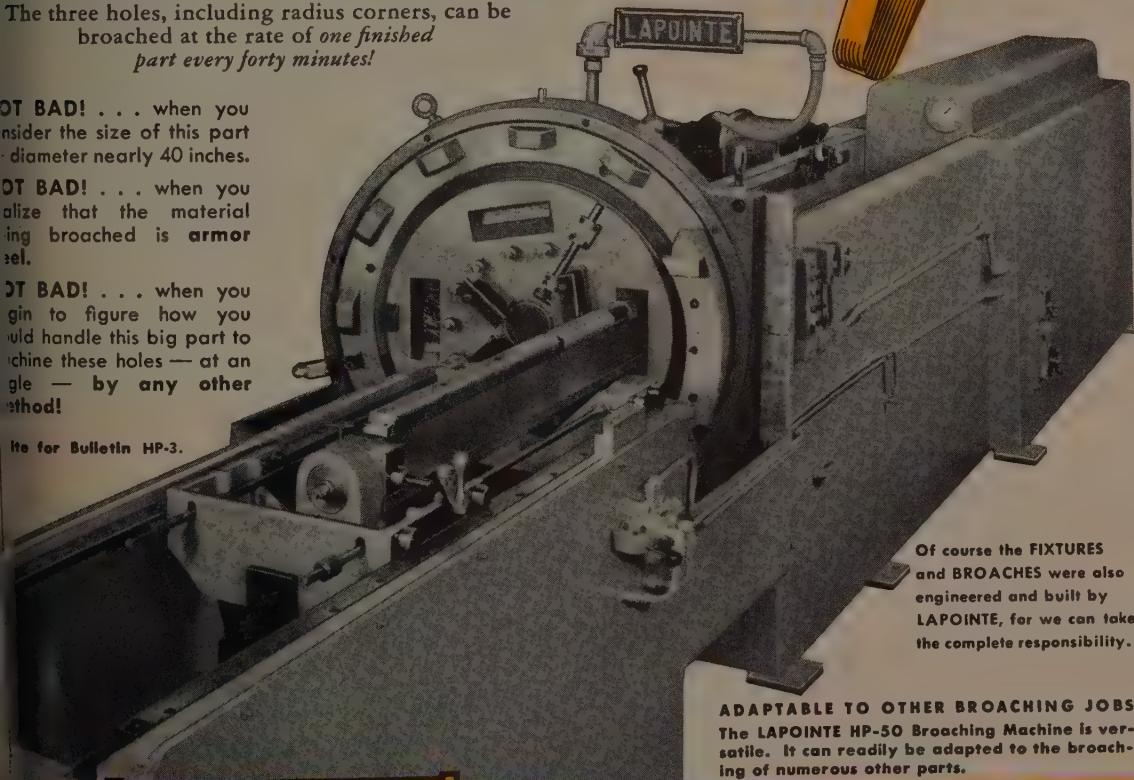
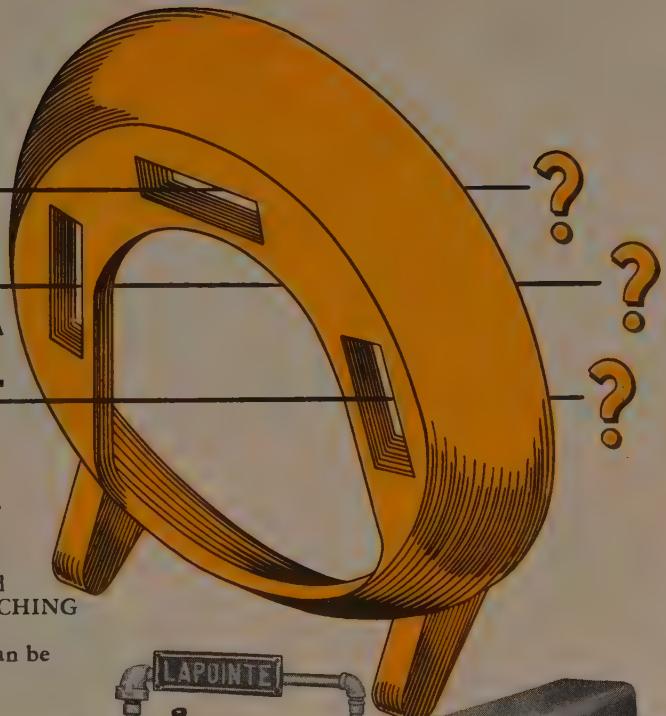
The three holes, including radius corners, can be  
broached at the rate of one finished  
part every forty minutes!

OT BAD! . . . when you  
nsider the size of this part  
diameter nearly 40 inches.

OT BAD! . . . when you  
alize that the material  
ing broached is **armor**  
el.

OT BAD! . . . when you  
gin to figure how you  
uld handle this big part to  
chne these holes — at an  
gle — by any other  
ethod!

ite for Bulletin HP-3.



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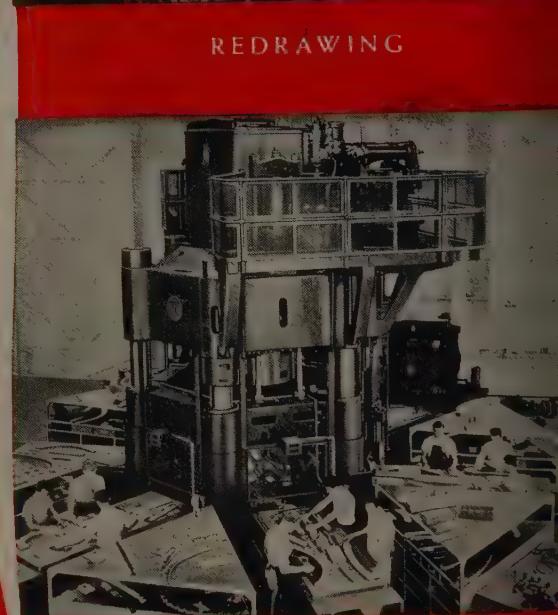
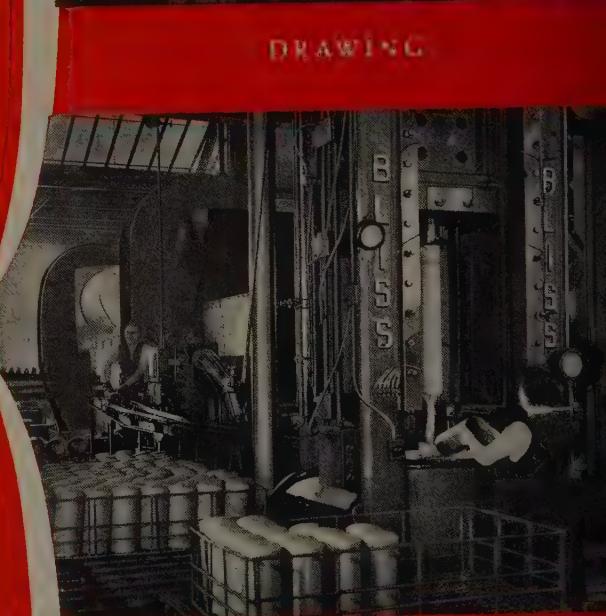
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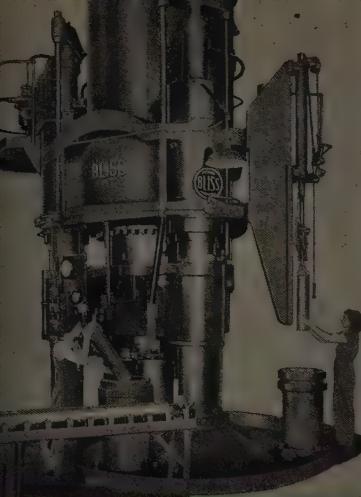


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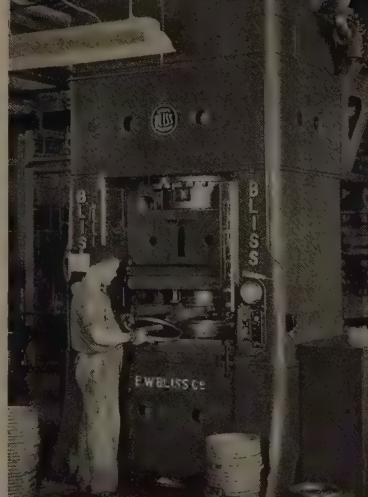
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Press  
for Every  
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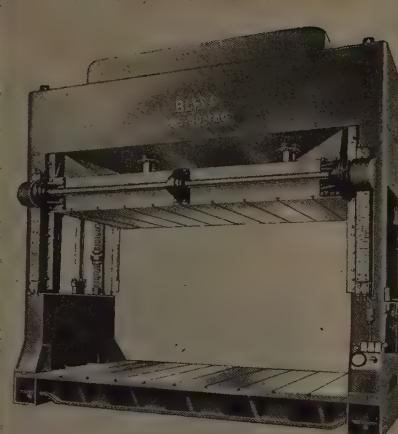
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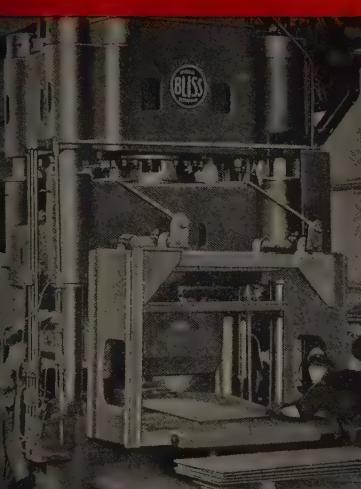
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**It's Bliss**

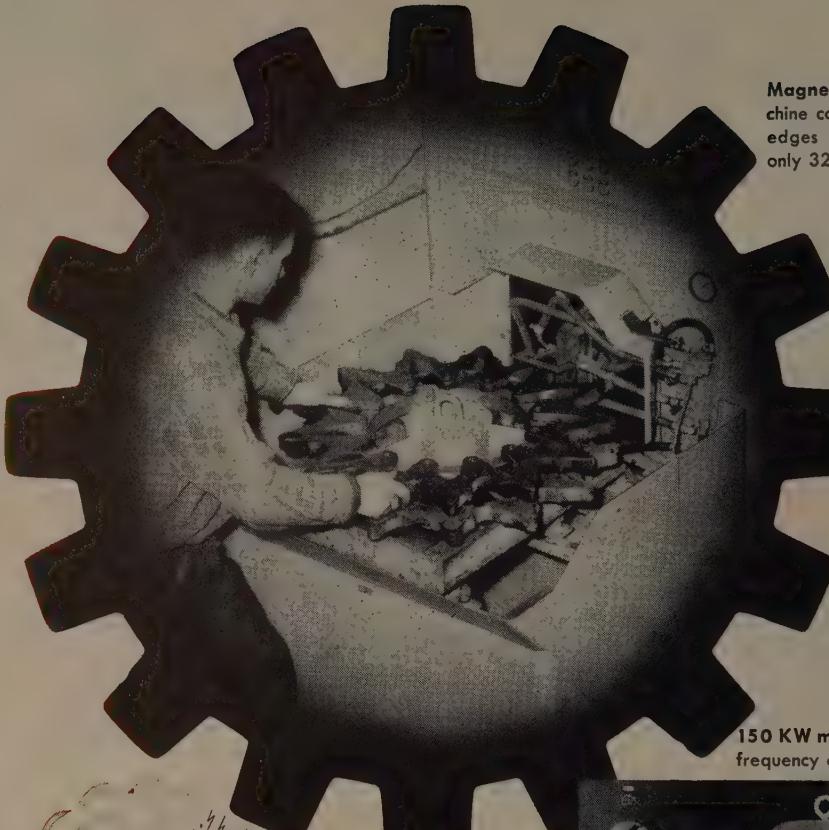
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Hydraulic or Mechanical...

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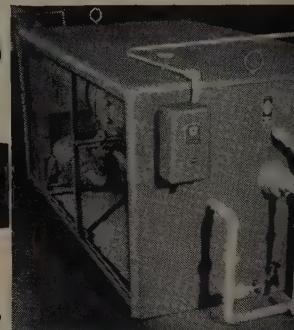
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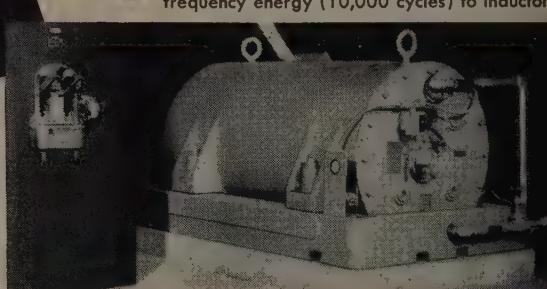
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**Magnetic field of induction hardening machine** concentrates terrific heat on working edges of sprocket tooth, hardening it in only 32 seconds.

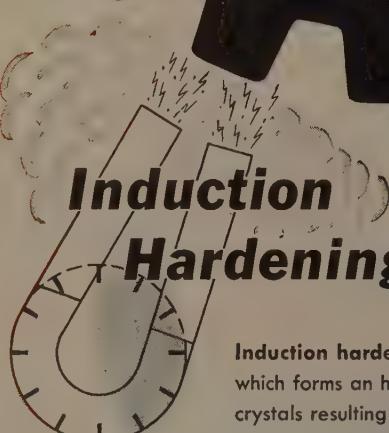


Heat exchanger and soft water circulating pump used for quenching



150 KW motor-generator supplies high frequency energy (10,000 cycles) to inductor.

## Induction Hardening

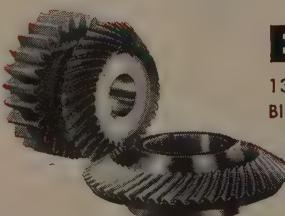


**Induction hardening** is a quick metal heat-treating process which forms an homogeneous, nodular structure free from the usual needle-like crystals resulting from furnace hardening. Induction hardening controls absolutely the depth of penetration and pattern of the hardened surface, retains original ductility of the core, and holds distortion to an infinitesimal degree.

- Unusual equipment—yes. But it enables BRAD FOOTE to produce gears, in its own shop, with the ultimate in wearability.
- Induction hardening is another BRAD FOOTE service in our complete control of quality gear manufacturing. It is further proof that "no one shares our responsibility."

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Bishop 2-1070 • Olympic 2-7700



subsidiaries

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**HOT ROLLED TO SHAPE,  
GIVE YOU A PRODUCTION HEAD-START**

It may be money-saving news to you that Disston can relieve you of much of the overhead in machining by delivering Disston Hot Rolled Steel Shapes to meet or closely approximate your specifications. These steel- and labor-saving shapes can be rolled in a variety of forms that should easily offer production short-cuts to you. Tolerances are close, and finishes are exceptionally fine. Disston Shapes can be made in either alloy or carbon steels, both electric and open hearth grades. Disston engineers and metallurgists are ready to work with you today. Write us, giving your needs.

**HENRY DISSTON & SONS, INC.**

226 Tacony, Philadelphia 35, Pa., U.S.A.



*A few of the many forms of Disston Hot Rolled Shapes now being used in industry.*

# We have just one axe

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# CARBO

T R A

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, N. Y.

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You get  
**UNBIASED  
COUNSEL**  
based on  
all abrasive  
methods

**Your business**, in mass production of parts or finished assemblies, is the problem of generating close tolerance sizes, of producing high surface finishes, of removing stock. The business of CARBORUNDUM is the exclusive ability to recommend and furnish you the specific type of abrasive product which will give you highest quality at lowest cost, on every operation you perform.

**Take snagging, for instance.** With abrasives there are at least 9 different ways to remove stock at high rates. That means the odds are 9 to 1 there's a better, lower cost way than the one you're using now. How can you be *sure*? By asking CARBORUNDUM...for CARBORUNDUM alone has a complete, branded line of grinding wheels and abrasive belts and tumbling and polishing grains...and only CARBORUNDUM can recommend without bias, on the sole basis of what's best for you.

**Or suppose you're manufacturing shears...** you must remove scale with tumbling nuggets—finish with abrasive belts—sharpen with grinding wheels—polish with abrasive grain. CARBORUNDUM alone can give you *one-source control* of abrasive quality, on every type of abrasive you use...quality that's constant, identical, dependable—thus economical.

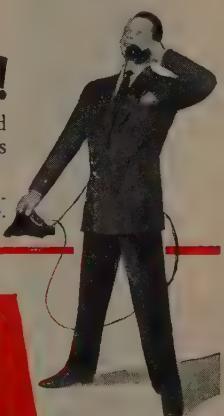
Several ways to do one operation? Call in CARBORUNDUM. Several processes on one part? Call in CARBORUNDUM. Either way, you win.

Call your **CARBORUNDUM Salesman or Distributor today!**

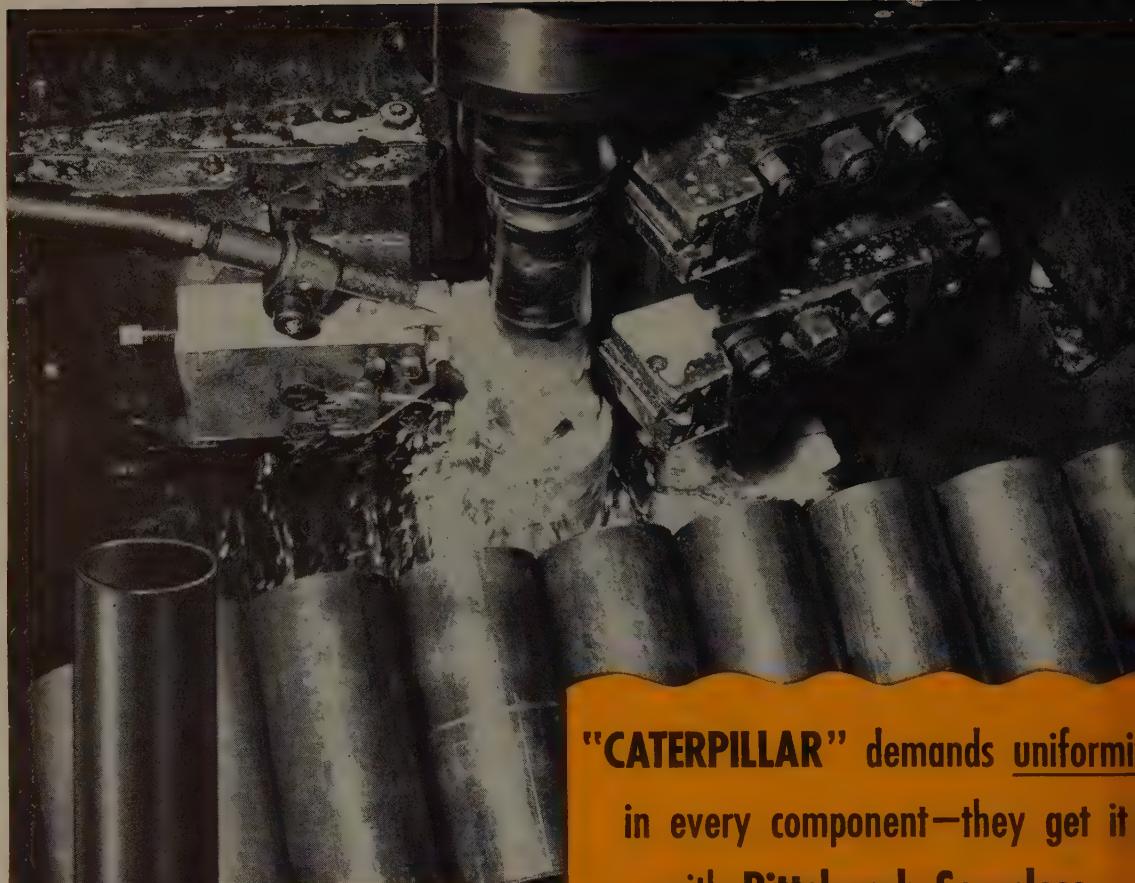
He's your best bet for complete stocks, prompt delivery...and best of all, experienced counsel on *every* new development in the *entire* field of abrasives. He's in the yellow pages under "Abrasives" or "Grinding Wheels." Phone him today—it's to your profit!

Ready now—your free copy of the new big **COATED ABRASIVE SELECTOR** catalog...containing detailed recommendations for both machine and hand sanding operations on tough and soft metals, glass, plastic, wood. Phone for it today.

# RUNDUM



the **ONLY** source for **EVERY** abrasive product you need



**"CATERPILLAR" demands uniformity  
in every component—they get it  
with Pittsburgh Seamless  
Cold-Drawn Tubing**

The uniformly excellent performance of "Caterpillar" built products is no mere chance. They get it by insisting on uniformity in every component of their equipment. For example, thousands of the track pin bushings shown being machined above are made of Pittsburgh Seamless Cold Drawn Tubing. It has the necessary size accuracy and finish to facilitate machining—the uniform physical properties that make big, high-speed production runs possible. The result is that the parts made from Pittsburgh Seamless have the consistent high quality found in all "Caterpillar" built products.

For a uniform, free machining cold-drawn mechanical tubing that helps improve your products—speed production, specify Pittsburgh Seamless.



## **Pittsburgh Seamless Cold Drawn Tubing**

**a product of Pittsburgh Steel Company**  
Grant Building, Pittsburgh 30, Pa.

# What's Screw'y?

by Phillips



*"Oh, he never bothers to turn it on. He's just fascinated by the beauty of those Phillips Cross-Recessed-Head Screws."*

#### PERFECTLY MATED!

Only Phillips Drivers are perfectly mated to Phillips Screws. Look for the name Phillips on the shank.

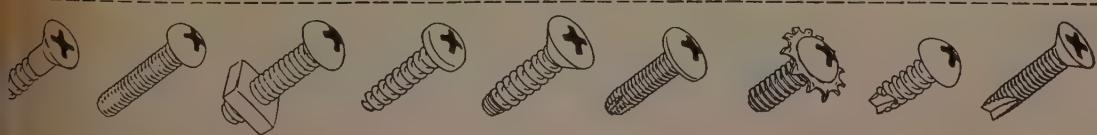
**BEAUTY** is only one of many reasons why Phillips Screws help you build a better product. These screws set up tighter, resist vibration. They are distinctively designed to give maximum strength of head, maximum

driver strength. What's more, they cut driving time up to 50%, eliminate driver skids and split screw heads. Whether you use Phillips Wood, Machine, Tapping Screws or "Sems", you save time, work, money.

## PHILLIPS Cross-Recessed-Head SCREWS

**X** marks the spot... the mark of extra quality

AMERICAN SCREW COMPANY • ATLANTIC SCREW WORKS, INC. • THE BLAKE & JOHNSON CO.  
CENTRAL SCREW COMPANY • CONTINENTAL SCREW COMPANY • THE EAGLE LOCK COMPANY  
ELCO TOOL AND SCREW CORPORATION • GREAT LAKES SCREW CORPORATION • THE H. M. HARPER CO.  
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THE NATIONAL SCREW & MANUFACTURING CO. • PARKER-KALON CORPORATION  
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TODAY'S... AND THE FUTURE'S... FINEST FASTENER

# NEW SOLUTIONS FOR OLD FINISHING PROBLEMS

ENTHONE CAN SHOW YOU **HOW**  
TO DO ANY OF THE FOLLOWING:



1. Remove rust and scale from steel in an alkali solution **without any attack on the steel**

2. Strip nickel, lead, tin, solder, silver and copper from steel without any attack on the steel

3. Electroplate on aluminum for soldering

4. Remove excess silver solder from steel

5. Phosphate and clean steel in one operation

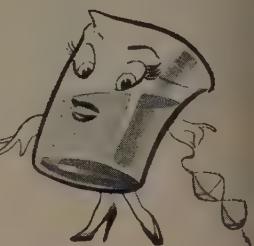
6. Prevent rusting of steel during drying or storage

7. Shorten alkali cleaning time to seconds.

8. Strip enamels from plastics

9. Remove heat scale from copper alloys without etching the base metal

10. Chromate zinc and cadmium for high salt spray resistance



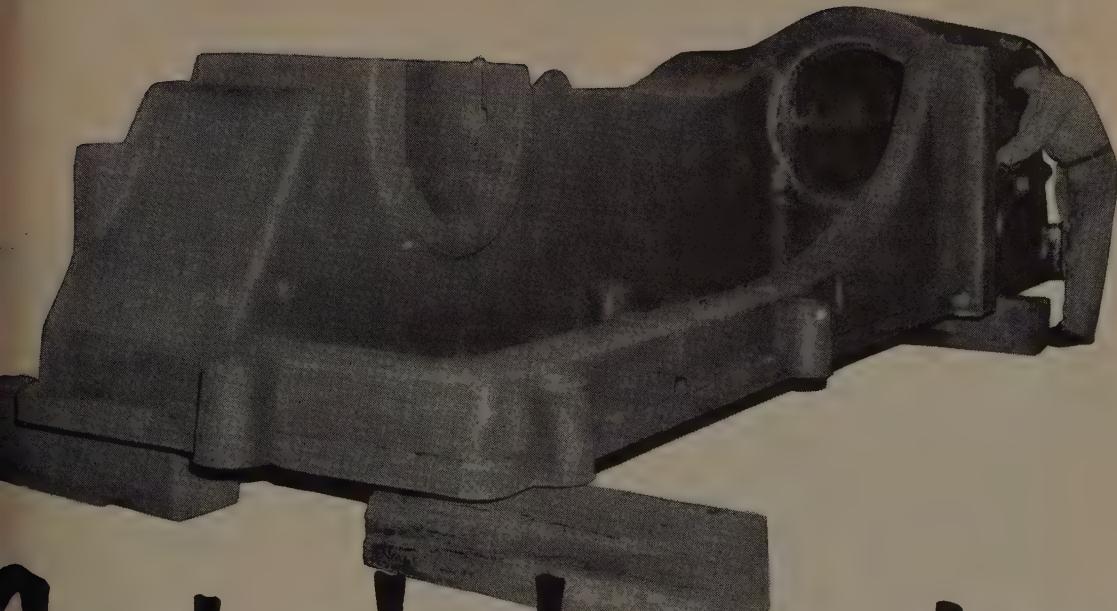
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PROCESSES

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# Cast of character

You won't find many stage directors around a machine shop. However, machines play many important roles in the drama of modern industry, and it's mighty important that they measure up to their roles—that they play their part as capably as the well-cast actor in a stage presentation.

You can count on a fine production when you rely on Sun Ship's skilled workers and versatile shops to produce the special machinery needed for a job. From the microscopic x-ray of the metal that goes into its making, to the precise engineering that means power and efficiency in operation, Sun Ship standards meet the highest test. The machinery plant and foundry, an important unit in our plant, is a complete machinery-building plant, with machine shops, pattern shop and foundry. The shop and foundry section has been in operation since 1872, advancing from building Corliss engines, steam marine engines, to Diesel engines and special machinery. Now, modernized and enlarged, as a unit of Sun Ship, it has won worldwide renown in building all types of special machinery to serve in building a greater America.

# Sun

SHIPBUILDING & DRY DOCK COMPANY

SINCE 1916

ON THE DELAWARE • CHESTER, PA.

25 BROADWAY • NEW YORK CITY

# Outstanding

ACCURAC

...for FORMING this shelf



Note the clean, straight lines of the moldings formed on the shelf by this Cincinnati Press Brake.



These outstanding sectional Bulman display shelves fit accurately.  
Photo courtesy E. O. Bulman Mfg. Co., Inc., Grand Rapids 2, Michigan

Accurate forming pays off at Bulman Company, manufacturer of sectional steel display shelving.

Producing better shelves with improved appearance, this Cincinnati Press Brake establishes regularity of product. Now clean, straight line formed from end to end of the shelving provides a perfect match-up of sections, eliminating a costly trim operation. With this Cincinnati Press Brake, discards are eliminated, assembly is accurate—production time cut in half—and the product improved. Investigate—you may cut costs and improve products in your plant with a Cincinnati All-Steel Press Brake.

Write for our NEW 72-page  
Press Brake Catalog B-4.



# s necessary...



Photo Courtesy The F. H. Lawson Company

## .for SHEARING

00 blanks an hour to  $\pm .005$ "

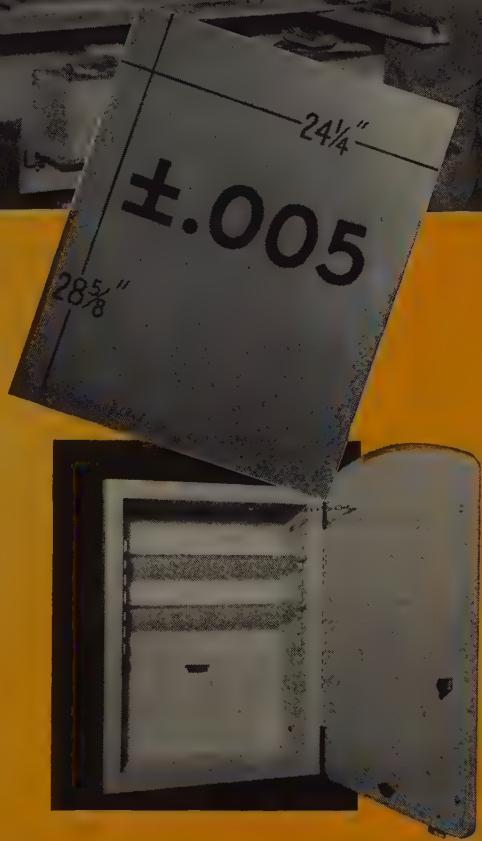
along the line this accurate blank saves money!

400 an hour, accurate steel blanks,  $24\frac{1}{4}$ " x  $28\frac{5}{8}$ ", produced in lots of 10,000 from 26 gauge stock sheets.

sts are low because of the accurate performance, rapid cutting, ease of control and safety features of Cincinnati-Steel Shears. One and one-half to two million cuts made before knives need regrinding—an important factor in the low cost.

e shear is so accurate that all along the production rejects are very low. Gauging for forming and bending operations is simple and rapid, assembly is both, time and money are saved, and a high quality product is maintained.

ite for your Shear Catalog S-5. Consult our Engineering Department on your shearing problems.



These accurate blanks are held to tolerances of  $\pm .005$ " on Cincinnati Shears in the shops of The F. H. Lawson Company, manufacturers of medicine cabinets, pails and all sorts of containers.

## THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES

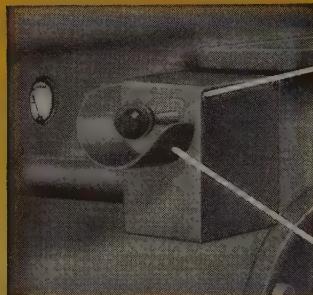


# Outstanding

# ACCURACY

...and INSTANTANEOUS CONTROL

effect a 30% saving!



The time required to shape 7 separate internal oil grooves in these steel sleeves was reduced from 12.5 minutes to 8 minutes, due to the Cincinnati Electro-Magnetic Clutch and Brake.

## NEW CINCINNATI ELECTRO-MAGNETIC CLUTCH AND BRAKE...

Where starts and stops are numerous they become a serious time waster!

The New Cincinnati Magnetic Clutch and Brake, with its single, convenient control lever, converts waste time into productive time. It gives the operator the fastest, simplest and most accurate control of his Shaper.

This powerful clutch and brake requires no shutdown for adjustment, and has a long, maintenance-free life, both time-saving and profitable features.

*Write for Catalog N-5 for the complete line.*



## THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES

February 16, 1953

## Irony on Wages

An estimated 2000 of the 7000 cases that were pending before the old Wage Stabilization Board probably would have been thrown out (p. 45). The decontrol action, of course, automatically approves the 2000 questionable ones. The irony is that many of those 2000 were submitted by managements which knew they wouldn't pass but allowed the unions to talk them into debatable matters because they thought they would never be allowed anyway.

## Mining Subsidies?

Watch the fate of S-869, a bill introduced by Sen. Edwin C. Johnson (Dem., Colo.) which would set up a Metals Credit Corp. to subsidize production from marginal mines. The proposed corporation would function just as Commodity Credit Corp. operates now in subsidizing farmers. The measure has wide Republican support and stands a good chance of passage.

## Regarding Briar Pipes

Briar smoking pipes assume a new importance for metallurgy, at least for the next couple of weeks. Between now and Feb. 28 President Eisenhower must act on a Tariff Commission recommendation for increased duties on imported briars. The action in this case will be the first real tipoff on the President's tariff philosophy. Domestic makers of bicycles, textile machinery and many other metalworking products will be affected.

## SDPA To Continue

You can expect the Small Defense Plants Administration to continue as an independent government agency outside the Commerce department. Strong pressure from such organizations as National Association of Independent Business will help preserve SDPA's present position, but legislators probably will resist efforts to expand its functions still further. SDPA particularly wants broader power to make loans to small business. That's now handled by the RFC acting on SDPA recommendations.

## Needed: More Basic Research

Look for the Eisenhower administration to put greater emphasis on federal support for basic research. The emphasis in the past has been strongly on applied research and development, but the government-supported National Science Foundation wants a shift because applied study is not possible without basic investigations first. Federal funds for applied research and development in nonprofit institutions totaled \$246.5 million in fiscal 1952, while basic research support in such institutions totaled only \$71.1 million.

## Tight, but Adequate

Manufacturers' working capital today is tight but adequate. Nine out of ten of the companies surveyed by National Industrial Conference Board indicated an adequate working capital but no fat. The

outlook among metalworking firms is poorest in the special industrial machinery industry. Less than 25 per cent of the co-operating metalworking companies reported that they experienced a lag in collections during 1952. Nearly half of the nonmetalworking firms experienced delays.

## **Hedge Against Over-Confidence**

Is industry over-confident about business prospects? National Association of Credit Men lists these "don'ts" as a hedge against too much optimism: Don't over-expand. Don't gamble on increased production facilities being able to pay out on this year's sales. Don't load up on inventories. Don't distribute such high dividends that you drain your cash reserves. Don't assume that the new administration automatically provides you with advantages in your labor relations. Don't assume that federal taxes will be reduced.

## **New Development**

Lewis Welding & Engineering Corp., Bedford, O., has developed a new die forge casting machine which makes possible new economies in casting production. The device employs the cold-chamber method of injection but introduces a new principle which provides for rapid fill while the metal is molten and unusually high final squeezing pressure. The machine also features a new method of clamping the dies together, known as the "Hydra-Lock," which develops a final clamping pressure of 650 tons.

## **Straws in the Wind**

About 85 per cent of the Doehler-Jarvis Corp. shares were voted in favor of the company's sale to National Lead Co. . . . Bethlehem Pacific Coast Steel Corp. has a certificate of necessity to write off in five years for tax purposes half of its \$278,000 expansion at South San Francisco . . . The Council of Economic Advisors will probably be disbanded; dismissal notices have just gone out to the council's staff . . . The formality of electing David J. McDonald president of United Steelworkers of America occurred Feb. 10.

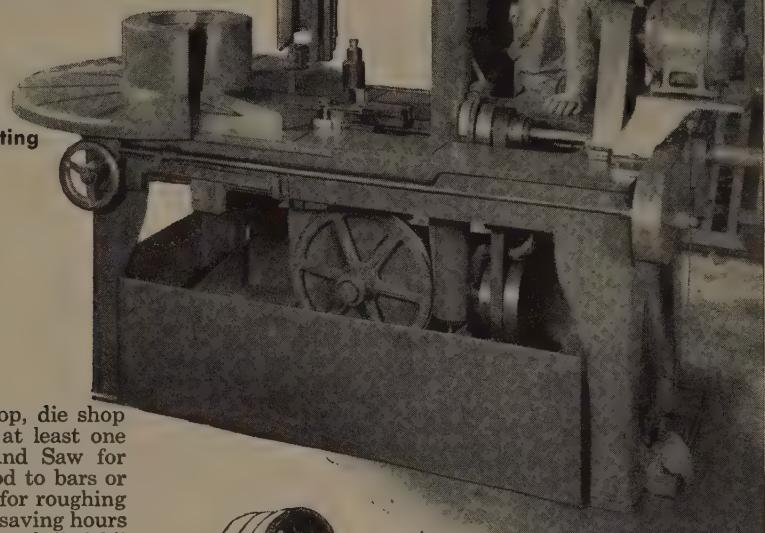
## **What Industry Is Doing**

Mill supply houses—good indicators of near-future metalworking production—are expecting a high and steady sales volume throughout 1953 (p. 43) . . . Steel production in January set a new monthly record of 9,888,000 net tons (p. 44) . . . The dropping of wage controls won't much change the 1953 labor pattern of many small strikes and stiff resistance to high wage demands (p. 45) . . . The need for standardized steel highway products and improved road machinery are emphasized at the annual convention of the American Road Builders' Association in Boston (p. 46) . . . Output of plastic pipe, around 15 million pounds in 1952, may jump anywhere from 25 to 100 per cent this year (p. 47) . . . Stockpiling of machine tools, as ok'd by the Vance Committee, is also approved by the armed services (p. 49) . . . How satisfactory a customer is the U.S.? Specific gripes and possible remedies are outlined on pp. 54 and 55.

# How else could this job be done

*so easily, so accurately  
and so inexpensively?*

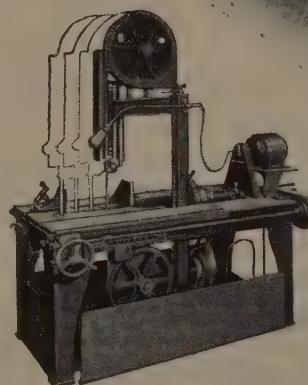
Segmentation of  
42" Steel Casting



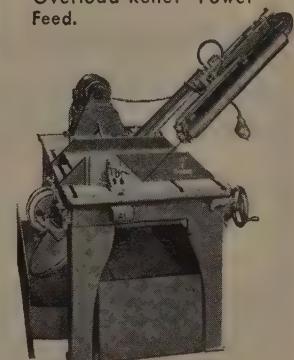
Every tool room, machine shop, die shop and maintenance department needs at least one No. 8 MARVEL Metal-cutting Band Saw for cutting off anything from  $\frac{1}{8}$ " drill rod to bars or billets of 18" x 18" cross-section . . . for roughing large work to size and shape, thereby saving hours of machining . . . for those occasional "trick" jobs, impossible on any other saw, that bob up in every plant.

Odd shapes that can't be held in the removable, quick-action vise, are easily set-up on the No. 8's large, T-slotted work table. MARVEL Overload-Relief Power Feed insures accurate cuts under the most adverse conditions because blade pressures are automatically held within limits which are pre-set instantly for each job. The blade is never forced beyond its capacity to efficiently and accurately remove metal . . .

Close limits are further assured through the work being clamped rigidly to the bed of the saw and the blade power-fed through it instead of pushing the work through the blade. This is also true in miter cutting, as the blade column—not the work—is swung to the required angle. The handiest, most versatile machine tool, it is also the busiest in most shops.



This double exposure illustrates how the blade maintains its vertical position while moving into and through the work, impelled by the automatic MARVEL Overload-Relief Power Feed.



Column set at angle to cut  
45° miter on 18" beam.  
Entire saw column can be  
swung to cut at any angle  
from vertical to 45° right  
or 45° left.

**MARVEL** Metal Cutting  
SAWS

Better Machines. Better Blades.

Write for  
Catalog

**ARMSTRONG-BLUM MANUFACTURING CO.**  
100 Bloomingdale Avenue

"The Hack Saw People"

Chicago 39, U. S. A.

# "Uneven" Sheets Cause of Press Plant Production Trouble, Says Trade Paper\*

"There are reports that uneven sheets are causing no little trouble with dies in automotive press plants. They are using sheets that, while perfectly sound for use, are not of the quality usually demanded for high production dies."

\*Name and issue on request



DEPENDABLE DAN  
T.M. REG. U.S. PAT. OFF.

This bears out what we have been saying that "unevenness," or "variation trouble" as we call it—is the real villain in stamping and roll-forming plants . . . Actually, most steel produced today is remarkably uniform within the standard practice tolerances for each product. The biggest bugbear is not "unevenness" but *misapplication*, coupled with possible variables in tools and dies, in machine set-ups, even in lubricants . . . So you can see what a challenge this must be to a sheet and strip warehouse. We don't make the steel. We pick it! Yet, for all practical purposes, our steel must work as well as what you might otherwise order direct-from-mill.

**Dependable Dan says, "Here's how it's done—**

"We at Reliance do it by job-fitting. That means combining all we can learn about your particular job with our 'feel for steel'—then applying in-stock material to give you what you need in dimension, temper and finish. That is just as true for Hot Rolled and Cold Rolled Sheets as for DSC Cold Rolled Steel Strip."

**FOR HELPFUL ACTION CALL OUR NEAREST PLANT OR OFFICE**

## DETROIT STEEL CORPORATION

### PRODUCERS OF

Coke and Coal Chemicals • Pig Iron • Ingots  
Slabs • Sheet Bars • Billets • Wire Rods  
Manufacturers' Wire • Merchant Wire Products  
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JACKSON 18, MICHIGAN, 801 Reynolds Bldg., Jackson 4-6189

MILWAUKEE 16, WIS., 4622 W. Center St., HIlltop 2-1840  
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TOLEDO 4, OHIO, 2114 Ohio Bldg., Garfield 8384  
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**RELIANCE Job-Fitted PRODUCTS**  
**COLD ROLLED STEEL STRIP and FLAT WIRE**  
Coils . . . Cut Lengths . . . All Temps  
**SHEETS**

**COLD ROLLED . . . HOT ROLLED . . . H. R. PICKLED . . . LONG TERNE . . . GALVANIZED**  
Standard and Production Sizes or Cut to Actual Working Dimensions

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February 16, 1953

## Mr. Wilson's Opportunity

It is estimated that purchases by the United States government in 1952 totaled \$54.2 billion, of which \$48.9 billion was for national defense. Government purchases accounted for about 15 per cent of the total gross national product of \$345.1 billion.

These figures emphasize the importance of Uncle Sam as a customer of private industry. It is likely that he will continue to be a big customer for several years. In view of this great volume of business, one wonders whether the relations between officials representing the government as buyer and executives representing industrial companies as sellers are as good as they could be.

There is considerable evidence to indicate that these relations can be improved. In truth, it is probably no exaggeration to say that if a hundred typical industrial companies, in any period except one of all out war or other extreme emergency, had the choice of accepting a contract with the federal government or one of equal value with a private company, 90 or more of the 100 would choose the latter.

Some of the reasons for this preference are real and some are fancied. Practically every person who has dealt with the government believes that a terrific amount of unnecessary red tape is involved. Many think that certain specifications are too exacting for the purpose for which a part is designed. Others think that contracts and specifications are unnecessarily complicated. "Too much paperwork" is another common complaint. There is also widespread criticism of bidding practices, inspection techniques, the unfairness of renegotiation under certain conditions, and failure of government people to understand industry's problems.

It is almost certain that a painstaking study of these and other complaints by somebody who has access to authoritative information on both sides of the argument would lead quickly to improved relations between buyer and seller. It happens that the new secretary of defense comes from a company that has had more experience in dealing with the government than any other company. If Secretary Wilson were to tackle this problem vigorously, he could make government contracting more attractive and could save millions for the taxpayers.

EDITOR-IN-CHIEF

**MILLIONS ARE WASTED:** While its new broom still is sweeping clean, the Eisenhower administration might well apply certain simple tests to all government activities. One

test would be: "Is this activity really necessary?" Another way to put the question would be: "Is this activity or service something that was demanded by a substantial number of citi-

zens or by a serious problem that called for solution or is it something dreamed up by public servants desirous of perpetuating their jobs?"

Truthful answers to these questions undoubtedly would reveal scores if not hundreds of chores being performed by the federal government that are not wanted or needed by the people. For instance, many departments and agencies publish numerous books and pamphlets on subjects of limited interest or on subjects adequately covered by books and periodicals issued by private publishers. Much advice is offered by government agencies which is not solicited.

A riddance of these unneeded and unwanted services would save millions of dollars.

\* \* \*

**HOPE FOR TAX REFORM:** Although former President Truman seldom gave any attention to the need of lowering taxes, strong pressure was building up in the 82nd Congress for a more realistic tax structure. This is revealed in the final report of the old House Committee on Small Business (p. 50), which finds that present high taxes on individuals reduce investment in business enterprises, that high taxes on corporations absorb profits that should be plowed back into business and that current depreciation policies are oppressive to new businesses.

This critical attitude on the part of a Democratic-dominated committee of the old Congress indicates that the efforts of the Republican 83rd Congress to rewrite the federal tax code on more constructive lines undoubtedly will be given strong support by many Democrats. With Congress and the executive branch both pulling in the same direction, there is more hope for tax reform than at any time in decades.

\* \* \*

**BUYING MORE SELECTIVE:** Outlook for 1953 for industrial supply companies—previously known as mill supply houses—is encouraging, even though one senses an overtone of caution. These suppliers expect a slight rise in the dollar value of their business in the current year over that of 1952. The physical volume of business (p. 43) will remain at about 1951's level.

In view of the manner in which the industrial supply services penetrate deeply into almost all activities of the metalworking industry, this

forecast can be construed as sort of a barometer of economic conditions in metalworking. Some items remain in tight supply, but in general inventories are larger and in better balance than for a long time. Already customers are indulging in the greater opportunity to "shop around" and to show more interest in prices.

\* \* \*

**DEGREE OF SATURATION:** Sometimes rather sudden changes in the buying habits of the public are confusing. According to the American Home Laundry Manufacturers' Association (p. 63), factory sales of automatic tumbler dryers in 1952 increased 26 per cent to 614,677 units. In the same year, sales of standard-size household clothes washers declined 6 per cent to 3,301,123 and sales of ironers dropped 27 per cent to 202,143 units. Why this marked difference in preference for these items?

One answer is that the dryers are a newer development than washers or ironers. Another is that mothers with young children recognize immediately the convenience of dryers. Probably the best answer of all is that the potential market for dryers is estimated to be only 3.6 per cent saturated, whereas that of washers is satisfied to the extent of 76.2 per cent and that of ironers to 9.2 per cent. The low saturation points in markets for some appliances are significant economic guideposts.

\* \* \*

**A LIFT FOR PLASTICS:** Whether or not plastic materials will replace steel in the bodies of automobiles still is a controversial subject. Almost everybody recognizes the fact that flat-rolled steel has numerous advantages under the mass production techniques employed in motor car manufacture. Nevertheless, the enthusiasts in the field of synthetic materials are not awed by these generally accepted advantages nor are they inhibited by any reverence for tradition. In fact, the current fad for sport cars has given them new encouragement.

Commercial production of low cost automobile bodies is actually under way. Glasspar Co., Costa Mesa, Calif., and the Naugatuck Chemical Division of the United States Rubber Co. (p. 79) are making bodies to be mounted on 100-inch wheelbase frames from a composition of glass fibers and Vibrin polyester plastics. The process is still in the "hand-made" stage, but motordom is watching its progress attentively.



# Service to Country— Service to Industry

As we commemorate the birthday of this great American we cannot help but recall an interesting parallel.

In 1833 Abraham Lincoln opened a country store in New Salem, Illinois. In 1842, Joseph Ryerson set up a small river-front iron store in the bustling village of Chicago.

Their beginnings were but a few years apart, and both were inspired by a firm belief in free enterprise and the exercise of personal initiative.

Abraham Lincoln went on to become postmaster of New

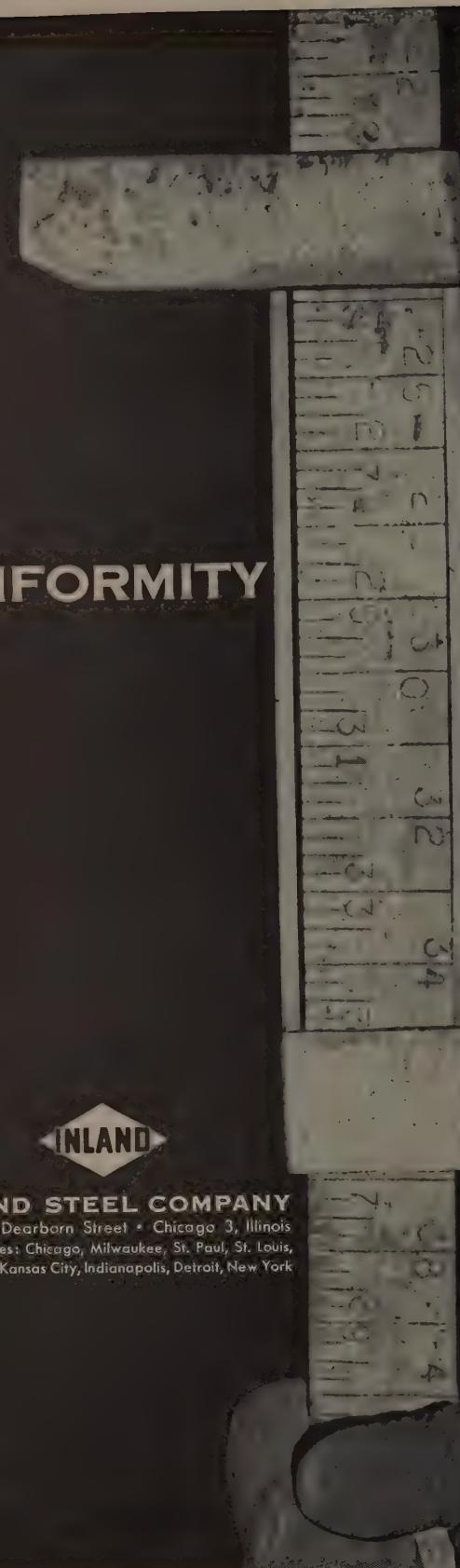
Salem—lawyer—legislator—President of the United States. Joseph Ryerson's iron store grew to be the world's largest steel service organization.

Both of these pioneers believed in giving service—one, service to his country—the other, service to industry. And how thankful we are that these strong men of the past built the foundations of our free country.

We are grateful, too, for our thousands of customers whose orders, through the years, testify to the Ryerson tradition of trustworthy service.

**JOSEPH T. RYERSON & SON, INC.**

PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH  
BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



UNIFORMITY

*is the rule  
at INLAND*

When, time after time, a  
steel mill product is manu-  
factured on the same mill  
by the same men using raw  
materials from the same  
sources, its uniformity  
shipment to shipment  
... is bound to be better.



**INLAND STEEL COMPANY**

38 South Dearborn Street • Chicago 3, Illinois  
Sales Offices: Chicago, Milwaukee, St. Paul, St. Louis,  
Davenport, Kansas City, Indianapolis, Detroit, New York

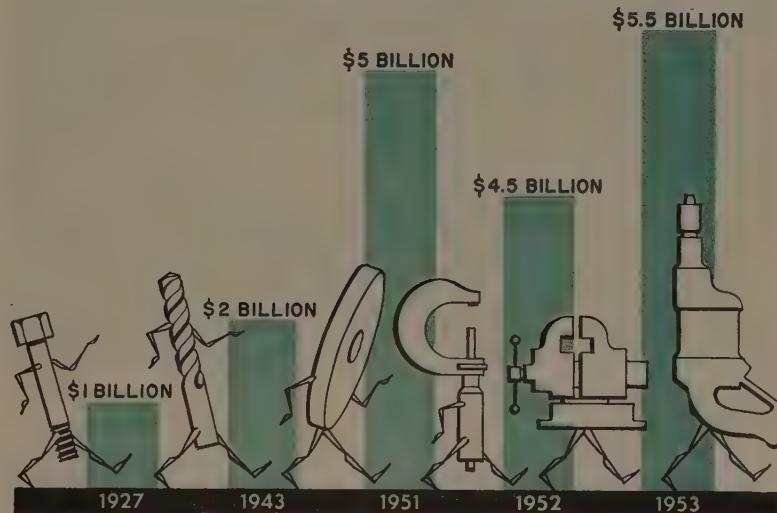
Dollar

Sales Up

Unit Sales  
Level

## INDUSTRIAL SUPPLY SALES

A SENSITIVE BAROMETER RISES SLIGHTLY



All figures estimated by STEEL.

A good indicator for general metalworking volume, industrial supply sales, points toward a sustained high business level in 1953

SPITE an overtone of caution, sensitive barometer of metalworking activity—industrial supply sales—indicates a rise in general metalworking's dollar volume this year over last (see the chart). Unit sales will be about equal to 1951's over after the inflation has been squeezed out of estimates. Industrial supply houses, or industrial supply firms as they prefer to be called now, can foresee general metalworking activity because they track the day-to-day operating and maintenance needs of nearly all kinds of industrial plants. They expect with few advanced orders, but rely on sustained industrial activity to have a good year, usually have no peaks or valleys in the sales curve.

Here's how the industrial supply situation shapes up in 1953: Inventories—Stocks are at all-time high levels though still slightly balanced. Items depending on supplies are generally good and improving. If an item is hard to get, there's some other factor that's responsible.

In tightest supply are precision tools such as micrometers, gages, verniers (shortage of skilled tool and die makers to turn out the end-product), larger sizes of screws, bolts and nuts (lack of large diameter rod and wire), high speed steel tools such as hack saw blades and drills using tungsten carbide (lack of tungsten) and diamond grinding wheels.

Industrial supply houses can now get mechanical rubber goods, in about 45 days compared with 120 days formerly; antifriction bearings, smaller fasteners, screws can be moved into stock in 8 to 10 weeks; bolts and nuts in 6 to 8 weeks; and standard cutting tools, in 6 to 7 weeks. Hand tools are in fairly normal supply as are most electric tools. Tubing, both welded and seamless, is improved, and pipe, up to 2-inch diameter, is, too.

One reason inventories are being built up is that customers are shopping around more now. They want to know whether an item is in stock and hesitate to place an order if it isn't. That's led indus-

trial supply houses to step up sales efforts.

**Sales**—Market analysis and research is on the increase by industrial supply houses. Few new salesmen were added in 1952 when the steel strike hurt the supply business in the third quarter. Now, some new men are being put on, but they're specialists in a certain field like fasteners, abrasives or cutting tools rather than general salesmen. Direct mail advertising, most common among supply houses, is being refined, and lists of prospects, purchased from the outside, are being carefully worked over.

**Prices**—Quotations, though firm, are questioned more often by customers than was the case over the past two years. Rather than shading prices, industrial supply houses are trying to attract sales by offering the added services of sales engineers, by doing their best to have an adequate stock and by offering a wider range of items.

It's all part of a cautious optimism that sales will be good in 1953 but delivery and prices will again be important factors. And as a business which enters many different sizes and types of industrial plants, it's significant that the barometer of industrial supply sales has gone up a point.



### Insulated for 30-mile Journey

When Heppenstall Co., Pittsburgh, acquired its New Brighton, Pa., plant in 1950, a big problem was transporting hot ingots and billets the 30 miles between the two plants. Engineers solved the problem by designing insulated containers like the one above. Made of reinforced asbestos sandwiched in low gage sheet metal, it carries ingots up to 23,000 pounds and loads of billets up to 25,000 pounds 30 miles, losing only 200° F. Limbach Co., Pittsburgh, made the boxes

## Steel Production Sets Record in January

PRODUCTION OF STEEL in January, 1953, was 9,888,000 net tons, highest ever attained in a single month.

That's equivalent to an annual rate of nearly 116.4 million net tons, considerably above the highest actual annual production of 105.2 million net tons achieved during 1951.

**Enigma Explained**—The output in January was more than 81,000 net tons above the production of last October, highest previous month; nearly 200,000 net tons over the revised December, 1952, output of 9,690,162 net tons and 752,000 tons higher than the output in January, 1952. To establish

the new record, steelmaking furnaces operated at an average of 99 per cent of their new capacity in January, compared with an average of 99.3 per cent one year earlier, says the American Iron & Steel Institute. Added steelmaking capacity accounts for the higher output with a lower operating rate during January.

### Eastern Brass To Convert Steel

Although steel supplies generally are improving, spot shortages still exist and conversion activities still go on.

**Eastern Brass & Copper Co.**, New York, is entering the conver-

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (net tons)	No. of weeks in mos.
	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
1953										
January	8,837,000	101.3	350,000	88.8	701,000	80.6	9,888,000	99.0	2,232,000	4.43
1952										
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00
2nd Qtr.	15,839,991	67.0	664,510	49.6	1,330,728	65.0	17,835,229	66.0	1,370,886	13.01
3rd Qtr.	16,986,603	71.2	662,981	49.1	1,538,166	74.4	19,187,750	70.4	1,461,367	13.13
4th Qtr.	25,812,797	108.1	1,027,315	76.0	2,095,766	101.3	28,935,878	106.0	2,202,122	13.14
Total	82,846,720	87.2	3,523,677	65.5	6,785,978	82.4	93,156,375	85.8	1,781,874	52.28

**Note.** The percentages of capacity in 1953 are calculated on weekly capacities of 1,969,275 net tons open hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953 as follows: Open-hearth 102,677,980 net tons; bessemer 4,637,000 net tons; electric 10,232,490 net tons; total 117,547,470 net tons. The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings; total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons.

\* Preliminary figures, subject to revision.

sion market with the establishment of a special department for emergency conversion of steel.

Eastern lists these rules for purchasing agent to follow if hunting for steel: 1. Look over inventory records and list materials which can be converted to sizes, gages and tempers you need. 2. Examine specifications to shift to more available sizes, gages and tempers. 3. Query purchasing departments of big manufacturers and prime contractors for materials they can no longer use because of specification changes. 4. Contact all mills for metal left by cancellations and end cuts.

### Pattern for Decontrol

Price curbs will go first, material lids. Markets are unduly disrupted at present.

LAST WEEK the first concrete steps were taken toward freedom of metalworking from price and material controls.

**The Reaction**—The prospect of price and distribution decontrol has thus far not had great influence on the metalworking markets. Scattered evidence of forward pricing is coming to light, but the practice is not widespread.

When distribution regulations are lifted on steel, copper and aluminum, sellers expect a spurt in demand on a few products, but they don't think the surge will be general. They think it will last too long.

**In the Works**—The current plan is to keep intact all steel, copper and aluminum allotments for the second quarter. If materials left over in quantities now expected, there will be open-ended contracts on an individual basis. No definite word on that is in the cards before Mar. 15. In the next two weeks will come NPA meetings with steel, copper and aluminum producers to study the controls in use.

On Feb. 13 OPS decontrols many metalworking items, including: Rubber products, all steels and secondary metals, castings, forgings, lead, zinc, tin, antimony, magnesium, industrial diamonds and many other minor metals and minerals, iron ore, collapsible tubes and closures.

# Spotlight on Labor

**The end of wage controls will mean little in labor negotiations for 1953. Industry will resist high wage demands, but give more fringe benefits**

THE LABOR drama won't be ended much even though some dialogue is modified by the end of wage controls.

What little effect wage regulations ever did have on the acting ended last Dec. 6 when the curbs finally died with the resignation of industry members from the board. The Feb. 6 action formally dropping the controls was more than a belated death notice.

**The Results**—The most sensational immediate result of the end of the regulations was that it permitted to go into effect wage and salary increases in about 7000 cases pending before the wage and salary boards.

Both AFL and CIO leaders say the demise of controls will mean many contract reopenings. There could have been many anyhow. President Walter Reuther is urging automotive reopenings on the grounds of the new BLS cost of living index (see p. 57 for more details).

**Synopsis**—The plot in the labor drama—controls or no controls—will unfold like this for 1953: No far-reaching wage settlement will take place this year. Unions will ask for a lot, but get it in scattered cases. High wage increases will be fought tooth and nail this year. The significant settlements will involve other issues like annual improvement factor, and social benefits.

It's long, but many short strikes will characterize this year. Unions will want to stir up too much inflation. If they do, Congress will retaliate with tougher labor laws.

**The Role of Taft**—As they stand most of Senator Taft's proposed amendments to the Taft-Hartley Act are mild. What's really bringing laborers sleepless nights is HR 2545, a proposal introduced by Rep. W. L. Lucas (Dem., Tex.) banning nationwide labor bargaining. Hearings on that and other measures

were begun Feb. 10 and produced major fireworks. But odds are against that proposal getting into the labor drama's script this year.

## NLRB Rules on Elections

The National Labor Relations Board ruled unanimously that competing unions cannot force representation elections in plants covered by five-year contracts during the full terms of the agreement. This ruling extended the board's previous stand on three-year union contracts.

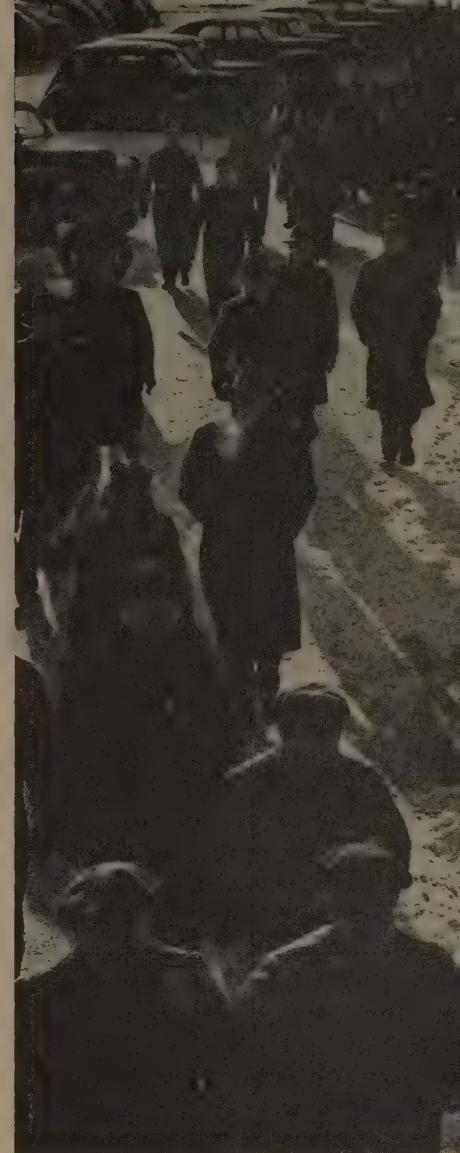
The basis for the ruling, the board said, should be "whether substantial part of the industry is covered by contracts of a similar term." This reverses its earlier actions, which were based on proof that such contracts were the "custom of the industry." Nine major auto producers and four of the five major farm equipment manufacturers are covered by the five-year contract.

## NAM Opposes Productivity Tie

Over-all productivity has increased substantially in the last 50 years, but not enough is known about year-to-year fluctuations to tie it with wages and efficiency, says the National Association of Manufacturers.

The association made a broad survey of available facts on productivity and found that so many factors entered the picture that it would be impractical to tie output per man-hour to wages. Instead, the association believes the best way to spread the benefits of increased output among all segments of the population is lower prices.

Some unions have sought to have such a tie-in as part of the national wage policy. But the association claims the statistical tools for carrying it out are unsatisfactory, and there is not likely to be any improvement. In addition, there are too many standards in existence.



NEA

## Study Attitudes of Radicals

The Timken Roller Bearing Co., Canton, O., has completed a study of CIO and Communistic attitudes toward free enterprise. A research staff completed the 3130-page report after 14 months of investigation.

Opinions of Communists and CIO leaders are similar in many cases, the report concludes.

Researchers examined official publications and periodicals of both organizations, testimony before Congress, newspapers, magazines and other sources. Copies of the survey may be obtained at cost from John Yezbak & Co., 3214 Prospect Ave., Cleveland 15, O.

# Road Building Shows Big Appetite for Steel



existing deficiencies within a practical period, according to George Fallon (Dem., Md.) of the House subcommittee on roads.

## Metal Powder Heads South

Powdercraft Corp., a newly organized company, is building a plant in Spartanburg, S. C., what it says will be the first metal powder fabrication plant in the South. Schedule to begin production by second quarter, the company will make sinters, bearings, structural parts and experimental textile industry parts.

Officials of the new firm are ex-employees in metal powder manufacturing. President is T. L. Robinson, chairman of the Metal Powder Association and former president of Met Co., Kent, O., which was bought last year by Ferro Corp., Cleveland. Several of Mr. Robinson's former associates at Wellesley join him in the new venture.

**Large highway programs ahead mean that road building will continue to take big portions of the country's steel product output**

ROAD BUILDERS long ago discarded the pick and shovel for power-driven construction machinery. Now, machines must not only dig a ditch faster, but dig a deeper ditch and a better ditch to build modern highways at lower cost per mile.

That was one theme stressed at the 51st annual convention of the American Road Builders' Association in Boston, Feb. 9-11.

**Appetite for Steel**—In addition to contributing heavily to improved road construction machinery by supplying improved materials for their design, the steel industry is being called upon to furnish better products and materials which go directly into highway building. The latter consumes 71 per cent of the sheet metal pipe output, 6 per cent of the structurals and plates and 5 per cent of the reinforcing bars produced. Current highway programs, including 664,000 miles of federal aid highway system requiring expenditures of about \$32 billion, carry nearly 10 per cent of their value in steel products.

In addition to new construction, there are thousands of steel highway bridges having old wooden floors which need replacement,

C. R. Clauer, chief engineer, United Steel Fabricators Inc., Wooster, O., told the road builders' meeting. Mr. Clauer described a new structural plate bridge flooring which is designed for modern materials and mass production techniques to meet such needs.

**Standard Trend**—Standardization in steel highway products is one of the major objectives of both suppliers and builders. Anchor rods to any highway guard rail specification can now be supplied from stock of three anchor rods where not too long ago more than 19 different anchor rods were needed, says J. E. McCracken, sales engineer, Bethlehem Steel Co., Bethlehem, Pa. Similar standardizing has been done on guard cable, dowel bars, signs and markers and other products.

Large highway programs ahead seem to assure that road building will continue to take the large ratios of steel products mentioned above. Reduction in federal construction expenditures will not mean curtailment of federal aid to highways as now authorized by Congress. Even then, present rate of highway construction is less than half that necessary to correct

## Tin Cans To Salvage Copper

A plant designed to process scrap tin cans for use in recovery of copper from mine waste sludge in Arizona, Utah and Montana is nearing completion in Houston.

Built for the City Junk & Salvage Co., the plant will clean the cans down to the basic iron and separate them. The processed cans will be shipped to the mines and placed in vats so that sludge can be poured over them. The action between the iron in the cans and the copper sulphate in the sludge will precipitate copper.

NPA officials believe the process will permit recovery of waste copper per amounting to 10 per cent of domestic supply.

## Oil Tool Industry Expands

Firms engaged in production of oil tools and specialty items in the Houston area are in the midst of a \$25 million expansion program, an attempt to meet the growing need for petroleum products.

Oil well drilling is expected to reach record proportions in 1962, says the *Houston Chronicle*, and wells will be drilled deeper.

Among the expansions noted is a \$13 million project for Cam Iron Works, which is producing ordnance items as well as oil tools. Hughes Tool Co. announced it

ase its capacity by 40 per cent. completed, the expansions raise capital investment in the try in Houston to over \$75

## gnethermic Gets Contract

gnethermic Corp., Youngs- manufacturer of electric in- on heaters, obtained a \$1-million contract to make low frequency induction heaters for six of the force's big aluminum extrusion es. To handle the work, the company is putting in a \$50,000 nension program. The units, n will melt aluminum billets resses ranging from 8000 tons 0,000 tons, have been in the pvement stage for over a year. will take billets 32 inches in ter and 80 inches long.

## pp Forges Titanium Parts

pp Forge Co., Chicago, says launching a program to man- ure titanium parts for Army nce. Seven different heavy ngs are involved in the pro- . To facilitate production, the any's main plant in Chicago is pped with a 40,000-pound drop hammer, a 4000-ton forging , additional furnaces for heat- mets to forging temperature, die sinking facilities and han- apparatus.

he company also produces air- parts of titanium, including gear forgings, structural ers and jet engine parts.

## Sets Priorities Assistance

orities assistance for the pur- of 289,026 tons of line pipe een authorized so far for the d quarter by Petroleum Ad- ration for Defense. Twelve crude oil pipelines and 11 petroleum products lines with cution costing over \$492 mil- account for 251,306 tons of pipe, and a number of smaller ets take up the remaining 0 tons.

the large projects, one crude nd five products lines received ties assistance for the first

Most of the construction is uled for completion by fourth er, 1953.

# A Young, New Industry Turns Out... PLASTIC PIPE

NEW USES and developments in plastic pipe are expanding a young industry. Manufacturers anticipate gains in 1953 ranging from 25 per cent to 100 per cent over 1952 production.

Still somewhat of an enigma to the public, due to the industry's short history, plastic pipe falls into two general categories: Flexible and rigid types. Both are extrusions of thermo-plastic materials, available in standard pipe sizes. Polyethylene is a principal material in flexible pipe, and its comparative shortage is hampering manufacturers. Some plastic pipe is reinforced with glass fiber, while pipe made from styrene combined with other materials such as synthetic rubber can be used for carrying corrosive liquids.

**History**—Although available in quantity for only about three years, plastic pipe appeared during the early years of World War II. Early types were rigid and served as a substitute for steel. Considerable research and development led to expanded production beginning in 1949. A spokesman of the Society of Plastics Industry says 1950 output was about 5.2 million pounds, mounting to an estimated 15 million pounds in 1952 and continuing its rise at the same rate in 1953.

Some 60 companies produce various kinds of plastic pipe. Some five or six can be classed as major producers while a growing number of small companies are entering the industry.

**Sizes**—The most common sizes of plastic pipe are from one-half inch to six inches inside diameter, with the smaller sizes leading in popularity. Experimentally, the industry has produced pipe up to 16 inches. The pipe is sold through area distributors in hardware and implement stores.

An early use for plastic pipe was in mine installations, where the plastic successfully resisted underground chemicals. Major users



Plastic pipe is installed underground by Carlon Products Corp., Cleveland

now include the petroleum industry, farmers, gas and cold water supply systems and well-drillers.

**Advantages**—Spokesmen of Carlon Products Corp., Cleveland, credit light weight and ease of installation, as well as corrosion-resistance, for increases in sales. Plastic pipe sections can be joined easily and resistance to rot, rust and soil acids make it long-lasting. Manufacturers say little adhesion between liquids and the pipe interior is encountered, causing no adhesive grip to the liquid's forward motion.

Problems faced by manufacturers include overcoming buyer resistance to an unfamiliar material. Plastic has certain drawbacks, such as weakening in high temperature ranges, but manufacturers hope to solve many of their problems as their industry reaches maturity.

## Grinnell Gets Big AEC Contract

Grinnell Corp., Providence, R. I., received a \$230-million contract from the Atomic Energy Commission to fabricate and install thousands of tons of seamless, stainless and miscellaneous pipe in the new AEC plant near Portsmouth, O. The pipe will be fabricated in a plant yet to be built in the vicinity of the atomic energy plant.



Authenticated

## Another Bonanza at Beech Aircraft Corp.

For the second time since the start of Korean hostilities, Beech Aircraft Corp., Wichita, Kans., announced a new model of its famous Bonanza. Dubbed Model D35, it is already in production at the rate of one a day, and 25 planes have been delivered to 22 states and Switzerland. Beechcraft made 3400 Bonanzas prior to this model. Beech has a \$210-million backlog of defense contracts

## Ammunition Production: Higher Target

THE AMMUNITION industry may continue to raise its capacity when most other defense producers have leveled out their expenditures on new plant and equipment.

The Army says that more than 52-million rounds of artillery ammunition and 3-billion rounds for small arms were produced by private industry and Army Ordnance manufacturing plants in 1952. Since Korea, the rise in output of artillery ammo has been particularly spectacular. The U. S. in the six months immediately following the war's start produced 1-million rounds for artillery pieces. More than 30-million artillery rounds were manufactured in the second half of 1952.

**Ammo-War**—Last year's mighty output—valued at more than \$2 billion—doesn't necessarily indicate that the ammo industry will end its expansion program soon. The Korean war, more than any past conflict, is an ammo-war. U.N. and Communist forces are both well entrenched. Sending up a pounding artillery barrage is the most frequently used method to weaken the enemy's front-line position. Rate-of-fire of the most important guns are several times the authorized rate per-gun per-day in World War II. Large ammunition supplies, therefore, are needed.

**Caught Short**—Supplies of ammunition are far under the desired level, according to many Army of-

ficials. The U.S. in 1950 was caught short on production facilities for ammunition. Machine tools were particularly hard to obtain. The ammo situation would have been quite serious if it weren't for large stocks left over from World War II. Present multiplication of the 1950 output may not be as encouraging as figures suggest.

So manufacturers of many types of ammunition may have a long way to go before production and government stockpiles are both at desired levels. Any stretch-out in ammunition orders during the coming months is improbable.

## Industry Buys More Aircraft

Production of light aircraft in 1953 is expected to continue rising as industry and agriculture boost their orders for utility aircraft. So says Joseph T. Geuting Jr., manager of the Utility Airplane Council of Aircraft Industries Association.

Deliveries of utility planes in 1952 halted a six-year downturn by jumping 32.8 per cent over the

previous year to 3058 light planes. Large backlog on planemaking books and production gains made last year indicate that volume will climb even further during 1953.

Significantly, over 82 per cent of the light planes produced in 1952 were four-place or larger types, says Mr. Geuting. In 1946, only 15 per cent of the light planes produced were four-place or larger.

## DTA Reports Tank Car Output

Defense Transportation Administration says that 6371 railroad tank cars were completed and put into service during 1952. This 6371-unit total includes tank cars built for domestic service, export and Defense department. Order backlog on Jan. 1, 1953, totalled 450 railroad tank cars.

## De Laval Expects Good Year

De Laval Steam Turbine Co., Trenton, N. J., reports that business in 1952 was better than 1951 and from all indications, it will be even better in 1953. Recent orders for propulsion units, turbo-generators and centrifugal and roto-pumps for marine installations and an existing backlog of orders give such assurance.

## Alcoa To Cast Ingots in Texas

Aluminum Co. of America will convert the output of its Port Lavaca, Tex., plant from pigs to ingots in April as the result of a \$22-million expansion begun last year.

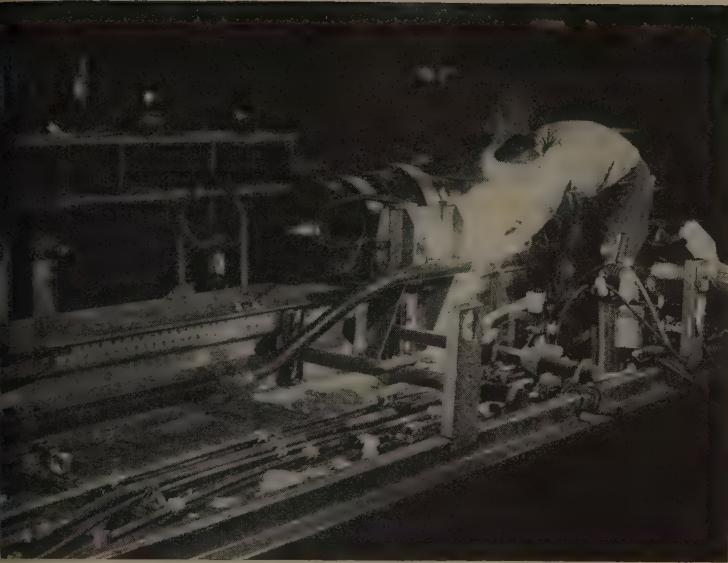
By shipping ready-alloyed aluminum to Alcoa's fabricating plants in Edgewater, N. J., and Davenport, Iowa, and to independent users, the company expects to save time and money.

By the end of the year, 90 per cent of the Port Lavaca production will be cast in ingots. The changeover will raise the plant's production from 100 million pounds to 170 million pounds a year.

## SELECTED DEFENSE CONTRACTS IN EXCESS OF \$100,000

### PRODUCT

PRODUCT	CONTRACTOR
Cartridges, Carbine	Remington Arms Co. Inc., Bridgeport, Conn.
Primers, Percussion	Eagle Lock Co., Terryville, Conn.
Motor Vehicle Parts	W. D. Bright Enterprises, Waltham, Mass.
Aircraft Propellers	Curtiss-Wright Corp., New York
Fire Control Systems	Magnavox Co., Ft. Wayne, Ind.
Radio Receivers	Motorola Inc., Chicago
Receiver-Transmitters	Collins Radio Co., Cedar Rapids, Mich.
Amplifiers	Bendix Aviation Corp., Detroit
Heaters, Kerosene	Florence Stove Co., Gardner, Mass.
Parts for Diesel Engines	General Motors Corp., Detroit
Parts for Sound Projectors	Ampro Corp., Chicago
Operating Tables, Pedestal	American Sterilizer Co., Erie, Pa.



## Touching the Torch to a Steam Line

A worker is welding lengths of 2½-inch wrought iron pipe used for the steam on one of the new railroad cars being manufactured by the Budd Co., Philadelphia, for the Chicago, Burlington & Quincy Railroad. A. M. Byers Co., Pittsburgh, made the noncorrosive pipe for air brake systems as well as steam lines

## Services OK Stockpiling

But they are lukewarm toward standby plants and too much centralized authority

GENERAL AGREEMENT exists between the Vance committee re- on machine tools stockpiling and the armed services thinking, a lukewarm attitude prevails some of the particulars.

Recommendations of the committee follow closely the practice used by the services between World War II and the Korean out- break, machine tool experts in the department think. In June, the Navy had 40,000 pieces of equipment, and it acquired over 100 more by Oct. 1, 1952. About 100 have been withdrawn for use by the armed services or because they were obsolete, leaving 100 in the Navy's inventory. The thinking calls for further stockpiling of machine tools essential for defense production with provisions to dispose of reserve tools as they become obsolete.

**Naval Approval**—Naval authorities back only mildly the plan to shadow plants, and then only as an alternative to stockpiling. Standby plants do not solve the problem of finding highly skilled

manpower in a hurry to operate them in times of emergency.

The military, generally speaking, agrees with the report's recommendation that appropriate measures are essential to provide more effective co-ordination and to minimize the deficiencies and imbalance among service programs. But such co-ordination should not extend to having a single, centralized office to determine what tools are to be stockpiled and what tools are to be doled out to the services in an emergency.

**Strive for Balance**—Agreement is found also on the thought that the services should strive to balance the various defense programs. At present, some are well advanced because of the needs of the Korean war. Others lag because of no immediate necessity.

## U.S. Will Buy Machine Tools

A wave of machine tool buying by the armed services is in the making. The Navy already has started negotiations, and the Army and Air Force are preparing to follow suit. While the exact number of tools is not known, it will be "many hundreds." Included will be large numbers of the big tools. Their acquisition will fill some of

the gap in the machine tool mobilization base and to some extent will reduce the need for erection of standby plants. The buying, of course, comes at a time when many machine tool manufacturers are in need of business to keep their organization going. In another move to stimulate sales of new machine tools, the NPA will announce a policy under which machine tools and other production equipment in the armed services' central inventory will no longer be leased for use by defense supporting industries, unless those industries are unable to get reasonably prompt delivery from the builders. Instead of leasing, users will have to buy.

## CHECKLIST ON CONTROLS

### Materials Orders

**ELECTRIC UTILITIES**—Direction 4 to NPA Order M-50, issued and effective Feb. 6, 1953, requires that electric utilities use the program identification E-5 instead of H-3 in placing authorized controlled material orders and rated orders for materials and products other than controlled materials for major plant additions when authorized by Defense Electric Power Administration.

**TIN**—Revocation on Feb. 6, 1953, of NPA Orders M-8, M-24, M-25, M-26 and M-27 removes all controls over uses and inventories of tin. The only requirement remaining is that monthly reports on Form NPAF-7 be submitted by consumers and dealers on tin stocks, receipts, shipments and consumption.

### NPA Regulation

**INVENTORY**—Amendment 1 of NPA Inventory Regulation 1, issued and effective Feb. 10, 1953, removes inventory controls from tin products.

### Price Regulations

**STEEL WOOL**—Amendment 34 of General Overriding Regulation 9, issued and effective Feb. 4, 1953, exempts from price control sales of industrial steel wool.

**BOLTS, NUTS, SCREWS, RIVETS**—Amendment 1 of Supplementary Regulation 1 of CPR 118, issued and effective Feb. 6, 1953, makes certain changes in the basis on which some manufacturers of bolts, nuts, screws and rivets may apply for increase in their ceiling prices.

**COPPER WIRE MILL PRODUCTS**—Amendment 4 of CPR 110, issued Feb. 5, 1953, and effective Feb. 10, establishes dollars and cents ceiling prices for certain copper wire mill products and for certain reel sizes and constructions.

**STEEL CASTINGS**—Amendment 1 of Supplementary Regulation 4 of CPR 60, effective Feb. 12, 1953, clarifies the basis of applying the 3½ per cent increase authorized on Jan. 23 for high alloy steel castings.

## Congress has a blueprint for rewriting the federal tax code. The old House Small Business Committee analyzed harsh economic effects of the present policy

A COMPLETE rewriting of the federal tax code and regulations is actively on the agenda of the 83rd Congress. The Treasury department and the Congressional Joint Committee on Internal Revenue Taxation could do a lot worse than adopt as a pattern the final report of the old House Committee on Small Business.

This report, representing unanimous views of Democrats and Republicans on the committee while it still was headed by a Democrat, Rep. Wright Patman of Texas, appears to be the most penetrating analysis of economic effects of the existing tax system that has been made public by a unit of the government.

**Investment Is Cut**—The report finds that the present high taxes on individuals reduce investment in business enterprises. It declares that the high taxes on corporations, particularly the excess profits tax, absorb profits that should be plowed back into business operations.

Further, present normal depreciation policy is especially oppressive to new enterprises, preventing them from recovering investment capital in the early years of their existence.

Identified as House Report No. 2513, 82nd Congress, 2nd Session, the 310-page study supports and echoes the criticisms leveled by businessmen.

**More Taxes**—Meanwhile tax bills in Congress continue to multiply. Eleven senators have introduced S 256 for a study of overlapping and competitive taxes at the three levels of national, state and local government. Similar bills in the 82nd Congress died in pigeonholes.

## New MSA Amendment . . .

Suppliers of goods to be exported under Mutual Security Agency programs should get a copy of Amendment 1 to MSA Regulation 1. It describes the documents which must be furnished to prove ship-

ment has been made, and certain minor changes in other forms and procedures, as the procedure under which claims may be presented. The amendment deletes the unworkable provision under which offshore procurement of petroleum products had to be at prices under our domestic ceilings.

Copies of the amendment may be obtained from the MSA, Washington 25, D. C.

## Criticize Senate Ruling . . .

When Robert C. Sprague, Massachusetts manufacturer, refused to sell stock in his family-owned electric company in order to become undersecretary of the Air Force, it illustrated a problem defense agencies are facing.

Army and Air Force authorities say that the Senate's insistence that Defense department appointees divest themselves of stocks in companies doing business with the department is making it difficult for them to complete their staffs. One complainant says he has been "seriously handicapped."

Mr. Sprague was president and director of Sprague Electric Co., North Adams, Mass. He had severed connections as president, but was unwilling to sell his stock.

## To Change Import Laws . . .

HR 1-2072, introduced as a direct consequence of the recent flooding of the U. S. market by certain goods manufactured in Czechoslovakia, is intended to prevent similar inundations.

The existing Foreign Trade Zones Act gives importers 30 days, while their goods are in foreign trade zones, to declare them, and during that period the goods are protected against increases in tariff rates.

The new bill would allow the old rates to be applied only to goods on hand in the zones on the day rate increases are affected.



## LAWMAKERS TAKE TO TV

. . . cameras corral congressmen

## TV Lures Senators . . .

"In the old days," aptly remarks Ned Brooks of National Broadcasting Co.'s Three-Star Extra newscasting program, "when a reporter called up a senator, he would usually be told by an assistant: 'Sorry, he's tied up in a committee meeting.' These days they tell you: 'Sorry, he's on the Kate Smith show today.'"

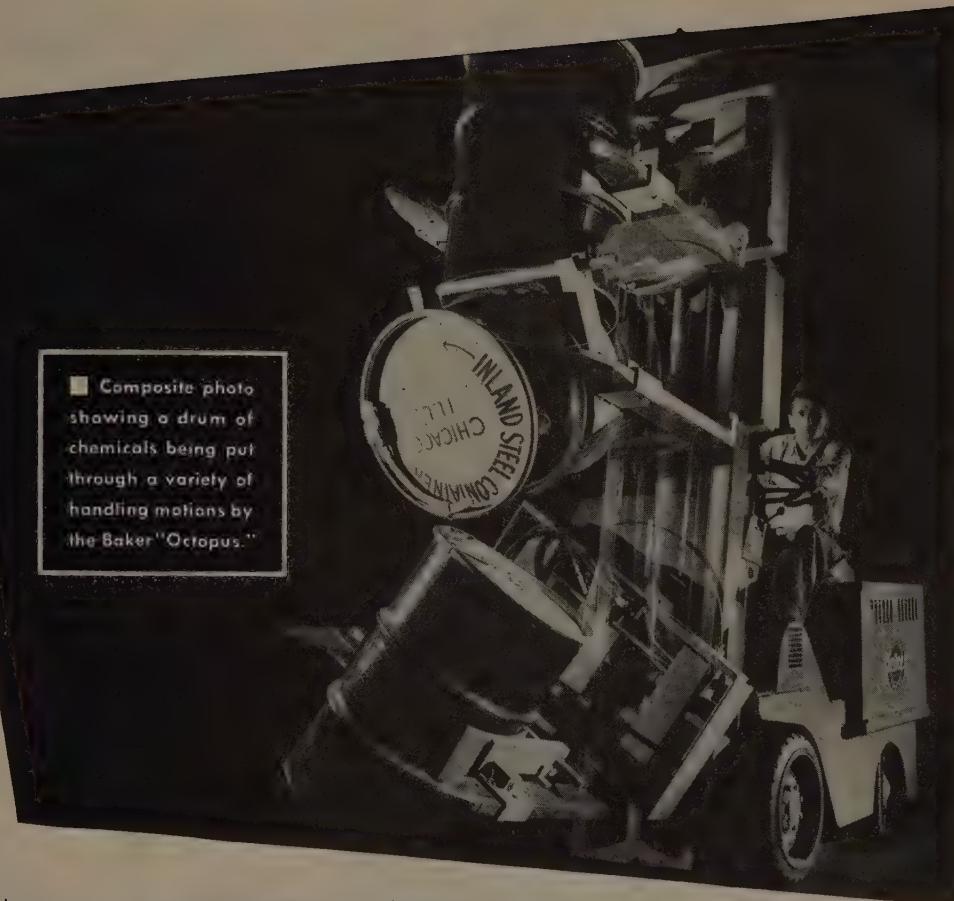
## Upholds Private Power . . .

Partial reversal of the trend toward public power may result from the appointment of former Rep. Fred Aandahl (Rep., N. D.) as head of the Bureau of Reclamation. "Over-expansion of public power and distribution," he told the Senate Interior Committee, is pointing in the direction of nationalization of power."

He expressed opposition to building steam plants to supplement public power production and thought public transmission lines "should not extend too far just to reach priority customers." Complete reversal of the trend, said Mr. Aandahl, is impossible because in "some areas" the development of public power has gone so far that "we can't backtrack."



■ Composite photo showing a drum of chemicals being put through a variety of handling motions by the Baker "Octopus."



## This BAKER TRUCK handles any shape load... *and stacks it in any position!*

■ You name the load—the Baker "Octopus" illustrated will handle it, whether it's a drum, a roll of newsprint, a packing case, a piece of machinery, a bale of cotton or a pallet load of cartons. Moreover, it will pick it up, transport it, raise or lower it, shift it to left or right, revolve it, up-end it, or stack it in any position. In fact, it will handle it with no more physical effort than is needed to operate the simple hydraulic controls.

The "Octopus" consists of a standard Baker Fork Truck equipped with a variety of Baker attachments—360° revolving head, 4-purpose carriage, up-enders, drum clamp, etc.—which may be applied individually or in combinations. While one truck may never be called on to perform all these functions, the "Octopus" demonstrates the range of utility of Baker fork trucks and attachments.

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BAKER-LULL Corporation, Subsidiary, Minneapolis, Minn.  
Material Handling and Construction Equipment.

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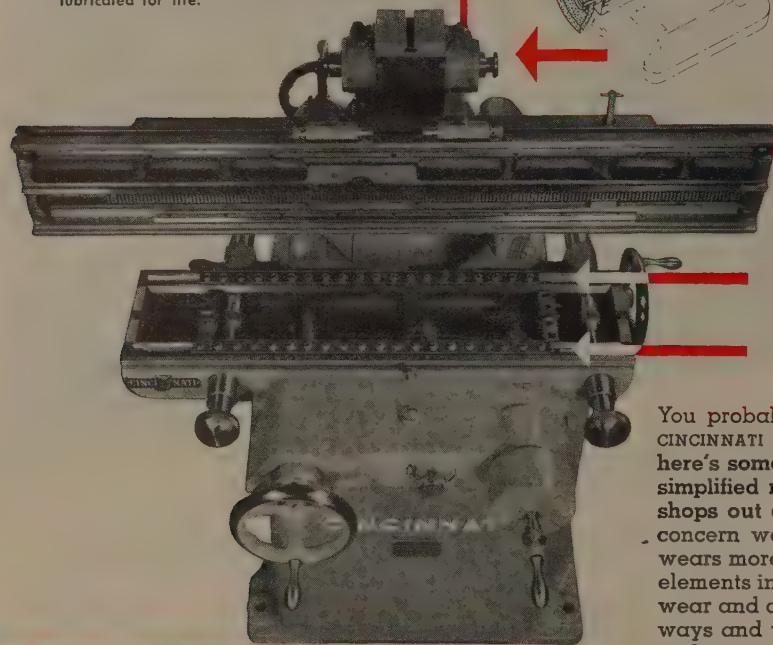
*Low-Cost*

maintenance

## of cutter and tool grinding equipment

A big Cincinnati advantage

**Grinding wheel spindle cartridge,**  
CINCINNATI No. 2 Cutter and Tool Grinder,  
can be replaced in an interval of minutes.  
Spindle is mounted on anti-friction bearings  
lubricated for life.



Sectional view of grinding wheel spindle cartridge.

Anti-friction ways, CINCINNATI No. 2 Cutter and Tool Grinder, are hardened and ground, easily replaceable.

You probably know all about the versatility of CINCINNATI No. 2 Cutter and Tool Grinders. Here's something you may not know about—simplified maintenance features that help your shop out of a tight spot. Two of these features concern wear. As you know, every mechanical part wears more or less in use, but there are only two elements in CINCINNATI No. 2's that may eventually wear and affect performance—anti-friction ways and wheelhead spindle. Should they wear, replacement after years of service, the job can be done by your own men in about two hours. Replacement ways are hardened, ground and "dummy" units in our shop; the wheelhead spindle is completely assembled in a cartridge. Anti-friction, sideways, enclosed motor has plenty of room for maintenance; dual side controls at front and rear; wide selection of attachments for sharpening all types of cutting tools, including sintered carbide . . . these and other features of low-cost cutter sharpening are illustrated in a 44-page catalog. You may obtain a copy by writing to our nearest direct office or agent, or the address below.

THE CINCINNATI MILLING MACHINE CO.

CINCINNATI 9, OHIO



CINCINNATI No. 2 Cutter and Tool Grinder. For complete information write for catalog No. M-1734.



The motor is enclosed in the base, yet there is ample room for maintenance.

# CINCINNATI

MILLING MACHINES • CUTTER SHARPENING MACHINES • BROWNING MACHINES • METAL FORMING MACHINES • FLAME HARDENING MACHINES • OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUIDS

# MDAP in the Balance . . .



## MAJOR ITEMS SHIPPED

In Number of Items & Rounds of Ammunition

### Military Department and Major Item

ARMY	Cumulative	
	Nov. 30, 1952	
Radios & Radar	36,600	
Tanks & Combat Vehicles	18,664	
Motor Transport Vehicles	98,689	
Small Arms & Machine Guns	1,407,213	
Artillery	20,095	
Ammunition, Small Arms	496,069,000*	
Ammunition, Artillery	10,937,000	

NAVY	Cumulative	
	Nov. 30, 1952	
Aircraft	481	
Vessels	441	

AIR FORCE	Cumulative	
	Nov. 30, 1952	
Aircraft	2,311*	

## WHERE ITEMS WERE SHIPPED

(Millions of Dollars—Cumulative Nov. 30, 1952)

Value Programmed	Value Shipped
---------------------	------------------

### Recipient Area or Military Department

#### RECIPIENT AREA

Europe	10,515	2,649*
Near East & Africa	1,206	438
Asia & Pacific	1,517	533
Latin America	107	3

#### MILITARY DEPARTMENT

Army	7,136	2,399
Navy	2,014	598
Air Force	4,196	625*
Total	\$13,346	\$3,622*

\* Includes adjustment of previously reported data.

† Based on reports from Army, Navy, & Air Force. Includes value of excess stocks, packing, handling and transportation, training and administrative expense.

## Congress Weighs Military Assistance

The whole question of buying military end-items here and abroad for the Mutual Defense Assistance Program is being reviewed

S. METALWORKING industries have a large stake in this question, before Congress and the administration: How much military and economic assistance should be given to countries this side of the Iron Curtain in fiscal 1954?

Not only is the total amount of aid to be determined, but also portions of the dollar authorizations earmarked for spending at home and abroad. Right now the share of the dollars that is going abroad is increasing and appears—if the French and Germans have their way—to increase further.

**Protection**—But the lion's share of the dollar expenditures will continue to be spent in the United States, with the finished military products being shipped abroad. The reason is that we do not wish to locate facilities in areas that might be overrun in the early stages of hostile action.

For fiscal 1952, the year in which a policy of military assistance was applied, Congress authorized \$7.3 billion for military and economic aid for our friendly nations abroad. Of this amount, the portion earmarked for military as-

sistance was \$5.7 billion. For fiscal 1953, the authorization was cut to \$6 billion, with \$4.2 billion earmarked for military assistance. For fiscal 1945 the Truman budget request was \$7.6 billion; this is the request being studied by the administration and Congress.

**Military Shopping List**—All of the 1952 and 1953 figures above mentioned were for procurement in the United States except for limited offshore buying. The hard goods bought and manufactured at home and shipped abroad included radios and radar, tanks and combat vehicles, motor transport vehicles, small arms, machine guns and artillery, ammunition for small arms, machine guns and artillery, vessels and aircraft. Also out of these funds the armed services defrayed the cost of training foreign military forces in the use and maintenance of military items.

Offshore buying of military hard goods got off to a slow start—running to \$729 million in the period Apr. 1 through Oct. 30, 1952. Then an additional \$1 billion was assigned out of the fiscal 1953 authorization to offshore purchas-

ing. Of the latter amount about \$870 million is unobligated at the moment—although this figure is due to be reduced substantially if some contracts now under negotiation by the Air Force at Wiesbaden, the Army at Heidelberg and the Navy at London are signed. There have been hints that the business may not be placed until Secretary of State Dulles and MSA Director Stassen give approval following their recent tour of Europe.

**Offshore Divvy**—The approximately \$893 million so far committed in offshore buying of military end-items breaks down by countries substantially as follows: \$350 million to France, \$180 million to Italy, \$205 million to the United Kingdom, \$48 million to Belgium, \$41 million to The Netherlands, \$34 million to Switzerland, \$11 million to Greece, \$10 million to Germany, \$6 million to Denmark, \$6 million to Norway, \$2 million to Sweden, \$300,000 to Luxembourg, \$100,000 to Austria. The breakdown for the procuring agencies: Army—\$538 million, Navy—\$245 million and Air Force—\$110 million.

Of course, it's too early to determine what amount will finally be authorized for military assistance. But, the Eisenhower administration hasn't shown any inclination so far to weaken any of the sinews of war. The outlook is for less drop in military production than was expected two months ago.



# ★ Uncle Sam, the Buyer

## IS THIS CUSTOMER ALWAYS RIGHT?

By ROBERT M. LOVE  
Assistant Editor

HOW SATISFACTORY a customer is the United States government?

A chart on this page shows the importance of that question. U. S. Treasury statements list federal expenditures of \$22.2 billion in the calendar year 1950, \$40.9 billion in 1951 and \$54.2 billion in 1952.

**Varied Opinions**—A shop owner says, speaking of the government, "You should remember you are not dealing with other businessmen but with a bureaucracy, and all of its members must follow the rules exactly. Too few manufacturers read the rules, fewer still memorize them."

A Pittsburgh manufacturer remarks, "You can't depend on them. They may give you a job today and upset your whole plant. About the time you get going, they change their mind and kick the whole thing out."

**More Favorable**—A Cleveland executive points out, "We can get along with them when we meet them half-way. Now we invite government representatives over to the plant, explain our operations, and have no trouble at all. Often we invite Army and Air Force men to sit in on our policy-making meetings."

Present plans indicate that in the next two years the national defense program will continue to be a powerful influence in the United States economy.

Defense expenditures may decline in the next two years, but an increase in nondefense spending for highways and other items could fill the gap, still leaving Uncle Sam as one of industry's greatest customers. While federal expenditures are not likely to continue their rapid rise of the last two years, since the defense program, as scheduled, is fairly complete,

state and local government purchases should increase more rapidly. They may rise from \$23 billion in 1952 to \$28 billion in 1955, the Council of Economic Advisers' report suggests.

**Complaints Arise**—The obvious differences between doing business with private companies and filling contracts with the government has created misunderstandings on both sides. Complaints of manufacturers dealing with the government run through all phases of industrial activity and vary as much as the illustrations cited earlier.

Industrialists often complain that there is too much red tape in bidding for contracts. A Detroit firm, accustomed to handling orders for millions of units, was perplexed to receive a 30-page invitation to bid on an order of 24 screw machine parts. Tired of throwing away such inquiries, they say the government should order items of less than \$1000 on simple purchase order and that larger contracts should be simplified.

**Red Tape**—An Automobile

Manufacturers Association survey showed that the automotive industry spends more than 1.5 million man-hours annually filling out forms for the federal government. A solution would be for the government to standardize procurement efforts and simplify its contractual language.

Of course no one denies the government its right to complete records. A great increase in number of inventory items required by the armed services has contributed to the amount of paperwork to be done. In 1941, separate items Air Force supply numbered 90,000. By 1950 the figure had risen to 407,000, while it is now over 1 million, the Air Force says.

**Contract Trouble**—Once a contract is secured, troubles begin for many companies. Some contractors can hardly weed through the verbiage surrounding specifications. They protest that the government, having given them a contract, is trying to prevent them from translating it.

To these comments, government

## His purchases soar . . .

### TOTAL GROSS NATIONAL PRODUCT

(Billions)

### CALENDAR YEAR

CALENDAR YEAR	FOR ALL PURPOSES	FOR NATIONAL DEFENSE
1947	\$233.3	\$15.8
1948	\$259.0	\$21.0
1949	\$258.2	\$25.4
1950	\$284.2	\$22.2
1951	\$329.2	\$40.9
1952	\$345.1*	\$54.2*

\* Estimated

From the Annual Economic Review by the Council of Economic Advisers.

presentatives reply that contracts could be understood completely by company before it enters bids. So few manufacturers, they add, consult Army and Air Force region offices to check on specifications before bidding.

An Air Force officer cited the example of a company which learned too late to package a certain product in wood instead of corrugated board. The Air Force refused to accept his product, as it was not delivered according to specification. The manufacturer suffered a loss in this case because he didn't check specifications.

**Value of Specifications**—Government men point out that military tolerances must be close because failure of a part can't be allowed in military products and that usage is much more severe than a similar part will have in commercial service. Wording of specifications could be simplified and clarified, however. Some manufacturers, such as laundrymen, will continue to object that tolerances need not be as close as they are.

"They don't understand our problems and they don't follow business practice," a small manufacturer complained. A Detroit executive suggested that the new administration put more skilled personnel into positions of contact with industry. Meanwhile a public relations man in Cleveland listed advantages which his company had reaped by inviting government representatives to tour his plant and attend policy discussions.

**Inspectors**—Government inspectors are inevitable when defense work is being done or government machine tools are being used. Most industrialists get along well with inspectors, but a New Jersey manufacturer claimed that they interfered with his operations by too-frequent inspections.

Renegotiation probably is the most popular aspect of government business. A machine shop owner said, "If a fellow works his head and makes a good profit, or makes the work more economically in others, the government takes away earnings that should be his. I would be in private business and have no incentive to be efficient."

**Need Profits**—Small business-

## THE MAJOR GRIPES

★ "Contracts are too hard to get. You enter a bid, then don't hear anything until the work goes to another firm."

★ "There is too much red tape in bidding. We fill out complicated forms for small amounts."

★ "The government insists on specifications which are too tight for our kind of operation."

★ "Specifications are too complicated. You have to be a lawyer to understand some of them."

★ "Schedules may be cut off or lengthened without warning. The government changes its mind in mid-stream."

★ "Inspectors come in and get in our way. They don't trust us."

★ "Government officials we come into contact with aren't familiar with business practice."

★ "There is no incentive to be efficient or resourceful, as extra profits are taken away."

## POSSIBLE REMEDIES

*A system should be worked out to publicize better the proposals for and awarding of contracts.*

*The government should simplify bids for small items, eliminate duplication of questions.*

*Industry must choose its defense work and read requirements more carefully. The U. S. can simplify many specifications.*

*Some specifications are unduly complex. Clarity in writing contracts will help much.*

*Some changes are inevitable, but industry should be adequately compensated when they come.*

*Industry should invite government personnel to tour plants and help them learn industry's problems.*

*The government should be sure skilled personnel are in positions of authority.*

*A federal study of renegotiation is a must. Industry is not getting a fair shake here.*

men point out that they need a good profit more than their bigger brothers. They contend that renegotiation limits the amount of government work they are able to do. Civilian jobs remain more attractive because losses on one contract can be covered by good profits on other work.

Frequently companies will voluntarily cut selling prices to the government to avoid making too large a profit. They claim that renegotiation involves a greater expense in record-keeping than it earns in savings to the government and tax-payer.

**Excess Profits?**—The Renegotiation Act of 1951 set no fixed formula to recover "excess" profits. It is intended as a broad operation to bring profits into line after contracts have been let. In national emergencies the government must buy hastily and accurate pricing is often impossible. Industry complains, however, that renegotiation is used to cover careless work in

routine rather than emergency letting of contracts.

From the government's point of view, renegotiation has been highly successful, having returned \$11 billion to the Treasury during World War II. All defense contractors, no matter how small, must file a financial statement with the Renegotiation Board each year—a requirement which annoys some manufacturers.

Most government-industry difficulties may well result from contractors entering government work for the first time and not realizing what they are getting into. Government representatives suggest that the best way to break into government work is through subcontracting.

Here the solution is for each party to learn the other's policies and problems. Successful co-operation between the government and many companies willing to meet Uncle Sam half-way testifies to such a possibility.

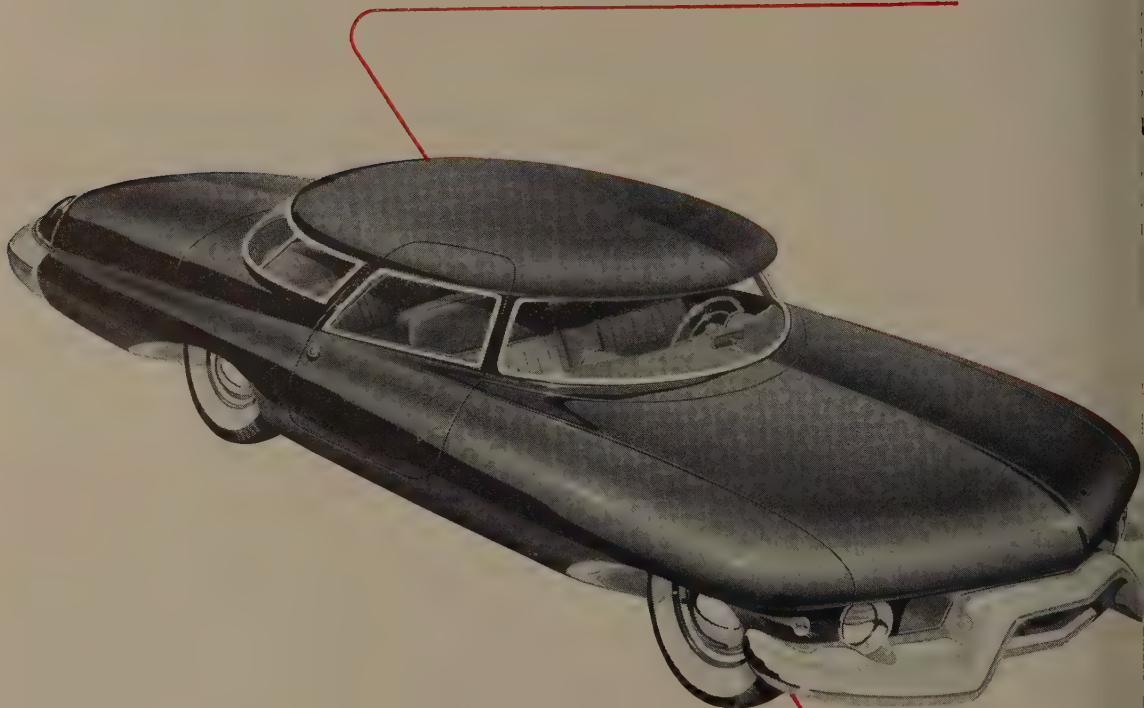
Specify



for Lighter Weight

Longer Life

with Economy



N-A-X HIGH-TENSILE, with its 50 percent greater strength than that of mild carbon steel, means that thinner sections can be used . . . resulting in lighter weight of products. Because it is an alloy steel, it possesses much greater resistance to corrosion with either painted or unpainted surfaces. It has high fatigue and impact values, at normal and sub-temperatures, with the abrasion resistance of a medium high carbon steel . . . resulting in longer life of products.

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Your product can be made lighter in weight . . . to last longer . . . and in some cases, be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

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MAKE A TON OF MILD STEEL  
GO FARTHER  
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MAKE YOUR PRODUCT  
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**The automotive labor pot approaches a boil. Although the old BLS index will be continued for six months, Reuther plans to use the issue as a wedge to reopen contracts**

**DETROIT**

RUNNER OF A pitched court battle could be the antics of Walter Reuther in refusing to accept the old BLS Index, and *b*, the BLS Index.

is clear to even the stewards that Mr. Reuther wants his contracts with the automakers renewed. It's clear, too, that he might use John L. Lewis' tactics to achieve what he wants.

**Pro and Con** — The propitious moment could be at hand. With new models just introduced and bad weather on its way, automakers are anxious to glut the normally heavy spring auto sales before the full. The vaunted "return to competition" gives added impetus to the automakers' desire to make a strike while their iron is hot.

On the other hand, labor doesn't want to arouse too much motion for fear Congress will dilate.

It removal of the wage ceiling gives Mr. Reuther a glimpse of the blue yonder. His contention is that the BLS muddle permits him to enclose the cost-of-living sections of the cost-of-living sections extant in his contracts for 1955. He argues further that the rest of the contracts in question should then be terminated. However, the auto companies are willing, so Reuther will negotiate a formula for change to the new cost-of-living index instead. His price for computation will be wage increases and higher pension concessions. *Ipsa facto* the contracts will have been reopened.

**ough Situation** — That is extremely distasteful to the automakers. But an equally distasteful situation in the auto plants may be forthcoming in the next few weeks. Settlement is not. When and if the strike comes, the automakers will claim a breach of contract and force the workers back under the Hartley. Mr. Reuther will

claim the contracts were not breached. Then the court fireworks will begin.

**New Plymouth Torque Converter**

Sluggish getaway is plaguing Plymouth's new torque converter production. Predicted in this column for quantity distribution about Mar. 1, the units, output of which were formally announced last week, will be limited sharply until April or May. Even then Plymouth isn't going to risk getting caught in shifting consumer demand. It'll wait until the dealer orders flow in before rolling up to the ultimate possible, which officials have said will be units for 40 per cent of all its auto production.

**Simplicity** — The slow start is surprising to many. Basically the unit is a pair of veined rotors. One replaces the flywheel and the other backs against the clutch plate. Behind the cast aluminum rotors and clutch is the normal three-speed transmission, drive shaft, etc. Taking its oil from the engine, the unit adds up to one of the simplest power transmission units in the entire field.

But the torque converter, dubbed "Hy-Drive" by Plymouth sales, was quite an engineering chore, Plymouth men will tell you. The unit adds only 35 pounds to power train weight, but the transmission housing had to be beefed up. The clutch was of necessity made heavier. The crankshaft was lengthened to accommodate the new aluminum rotor unit.

**Modifications** — Then there was the problem of getting the oil from the engine to the converter housing. The oil relief valve had to be modified and oil galleries redesigned. Then oil lines were added to transport the oil to the housing. The radiator core was increased for better engine cooling. Fins were added to the converter housing for



**Curiosity**

Visitors of all ages at the Chrysler Corp.'s touring "New Worlds in Engineering" show find the above model of a Firepower V-8 engine hemispherical combustion chamber fascinating. The model demonstrates how the greater air intake improves engine "breathing" and gives better power

oil cooling. Length of the drive shaft had to be decreased. Road tests disclosed that the device had a propensity to induce stalling in stop-start driving and the carburetor had to be modified accordingly.

But after three years of road testing, Plymouth almost has its new torque converter. When John Q. buys his new Plymouth this summer he'll find the unit available for \$38.20 less than Ford's Automatic (\$184) and \$32.55 less than Chevrolet's Powerglide (\$178.35).

**Operation** — Oil capacity of the engine-converter combination will be ten quarts with change and filter replacement recommended every 5000 miles. To operate the unit, the clutch is depressed and the lever moved into high gear. From there on it's strictly accelerator and brake unless you're caught in sand or wish to use second while going down a neighborhood mountain. Of course, to back

up you'll need to put in the clutch and shift into reverse, but unless gear change conditions arise you can stop-and-go drive all day without touching clutch or gear shift.

Acceleration figures aren't available on the unit, but don't figure on any traffic light drag racing. Plymouth reports a 2.56 to 1 torque ratio with the unit, but taking the shift out of driving takes much of the standing accelerating out, too.

**Developments Yet**—R. C. Somerville, Plymouth vice president, says that announcement of "Hy-Drive" does not mean Plymouth has forsaken the idea of offering a fully automatic transmission—i.e. with actual transmission shifting automatically.

However, the need for something must have been definitely felt at Plymouth. Last year 2,057,011 new cars carried automatic transmissions while 1,654,457 carried the manual shifter. Powerglide was introduced by Chevrolet in 1950, while Fordomatic entered the arena in 1951.

## February Output Soars

Despite tightening cold-rolled steel sheet deliveries, short-month February car output should exceed January levels, says *Ward's Automotive Reports*. Projected figures indicate 486,000 units will roll off the assembly lines as the production pace returns to normal following changeover. January output totaled only 465,745 units.

Blamed for the tightening cold-rolled sheet situation are: Heavy ordering, labor unrest in newly-built steel mills and defense set-asides. However, scarce buying by the automakers could be contributing to an exaggerated shortage picture.

So far this year General Motors, Ford and Chrysler are building 89.3 per cent of car production compared with 86.6 per cent in 1952, says *Automotive News*. Meanwhile Kaiser-Frazer shut down a week for "inventory adjustment" and Studebaker is having new model production problems after its rash of publicity.

Studebaker hopes to have sedans at dealers for showings on Feb. 16 as planned, but hard-tops are still somewhat in arrears.

## Ask Ladies Over 40

A Ford Motor Co. stylist confirms the statement in this column last week that Lincoln is worried about its similarity to the rest of

blowout prevention in automotive history, at least since the solid rubber tire.

The not-so secret of blowout prevention is a double layer of nylon cord which is built into the inner air chamber. Demonstrating toughness, a tire was driven over a five-inch steel spike and heavy concrete blocks. As a clincher, a tire was driven around without the outer tire at all—clad only in its treads.

## Price Control Exemption

Exempted from price control and insignificant in the market by *Ward's* are: Sales of all models of used passenger automobiles prior to 1950 models; custom-built passenger automobiles; foreign-made used passenger automobiles; and sales of modified passenger automobiles.

"Modified passenger automobiles was a particularly interesting item," says *Ward's* in its latest release. It reads in part: "This group includes the so-called hot-rod and special sport, speed appearance vehicles which have been built by individuals, usually at considerable expense, often as a result of experiment or hobby. Taxicabs which are usually altered to adapt them to their special use are not exempted by this action."

And that, in Washington, seems to cover the subject in that there was any confusion.

## Short Men Included

Nash dealers, "regardless of size," are being polled on what models and optional equipment they desire for the market in their areas, reveals H. C. Doos, v-p. Sales. Calculations from across the country on the percentage of models and optional equipment desired are reflected in Nash production schedules and distribution procedures for the months ahead.

## Air Force Study Group Report

Spending for Air Force stock spare engines and parts can be cut by several hundreds of millions of dollars, a special Air Force study group reports. It can be done by cutting delivery time, by recalculating needs of the program and by working out better distribution methods for the more expensive items.

## Auto, Truck Output

U. S. and Canada

	1952	1953
January	613,517*	409,406
February	467,691	
March	517,207	
April	576,505	
May	546,673	
June	560,947	
July	246,461	
August	293,722	
September	592,253	
October	645,862	
November	556,366	
December	*569,456	
Total	5,981,626	
Week Ended	1952	1953
Jan. 10	139,620	92,669
Jan. 17	148,718	98,669
Jan. 24	149,578	94,722
Jan. 31	150,289	102,402
Feb. 7	148,430	102,406
Feb. 14	151,000*	111,821

Sources: *Automotive Manufacturers Association*, *Ward's Automotive Reports*. \*Preliminary

the Ford line. He goes on to report that fewer average people can pick out the Lincoln on the street in silhouette than any other car. Here's the way the conclusion was reached:

Each year Ford prepares cutouts of all the major makes with name plates on hood and hub caps removed. Then a group of housewives over forty, the most naive bunch of people in the country when it comes to cars, are asked to identify all the cars they can.

It's mayhem to Ford, but Cadillac is most recognized by these unexperts. Right down at the bottom is Ford's own standard of the world, Lincoln, inextricably confused with Mercury and Ford. The situation is due for correcting next year, for Lincoln put its eggs heavily in the horsepower basket in '53 models.

## Nylon Does It

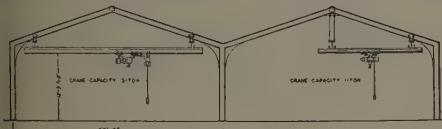
U. S. Rubber Co. announces a new "Lifewall" tire which, the company claims, offers the first positive



Photos courtesy of The Thew Shovel Co., Lorain, Ohio.

Rigid frame structure by The Steelcraft Mfg. Co., Rossmead, Ohio.

# AMERICAN MONORAIL EQUIPS RIGID FRAME BUILDINGS



*with flexible overhead crane service*

Don't let crane requirements stymie your consideration of rigid frame buildings. Packaged buildings not only provide definite savings in construction costs and erection time but can be equipped with crane service over the entire area. American MonoRail cranes up to 5-ton capacity are available for entire span or half span operation. If

you are planning plant expansion and considering rigid frame type construction, be sure to include American MonoRail cranes. Our engineers will gladly consult with you and show you cost and space saving advantages, in addition to original installation savings.

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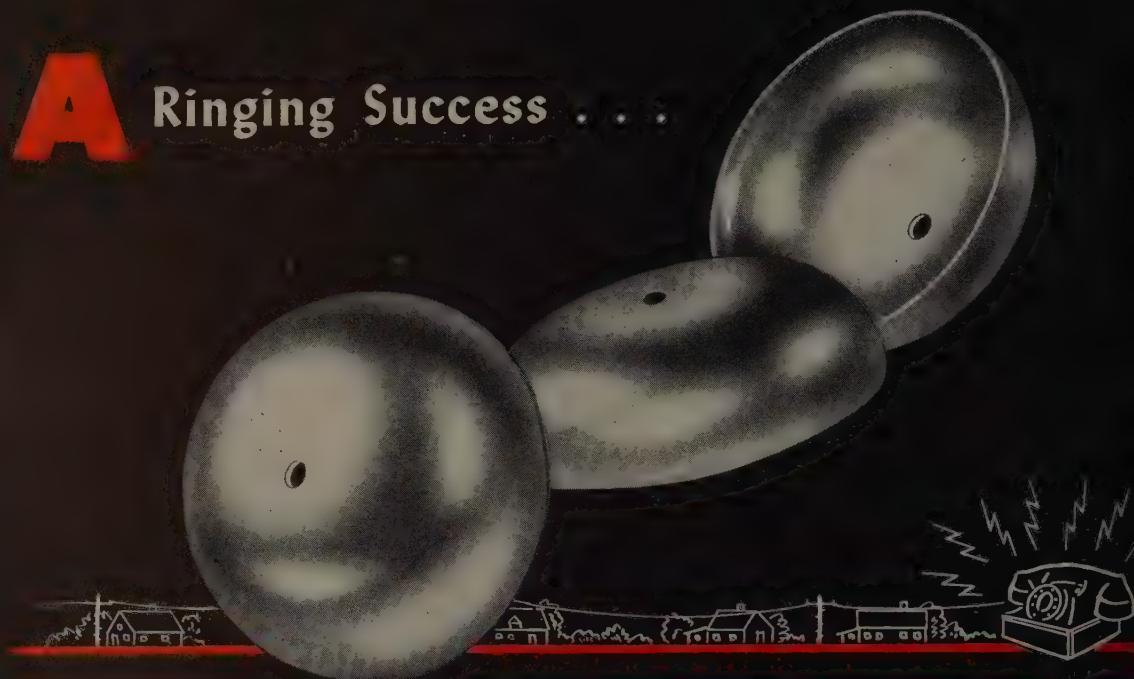
THE AMERICAN MONORAIL COMPANY

13102 ATHENS AVENUE

CLEVELAND 7, OHIO

# A

# Ringing Success . . .



**SHARON<sup>®</sup>**

## DEVELOPED SPECIAL STEEL MAKES TELEPHONE BELLS RING TRUE

Shortages of critical materials often force the use of substitutions. This happened in the telephone industry, where recently a manufacturer of phone bells — cut off from his supply of copper and brass — began looking for a suitable replacement.

Steel was still on the unrationed list, but bells formed of available steel didn't produce the required

ringing tone. That is until Sharon Steel was asked to develop a steel of a temper that could be formed into bells with the required tone.

Sharon engineers went to work and in a short time developed a steel that fills the bill so effectively it is expected to become standard regardless of the availability of the materials formerly used.

\*Specialists in STAINLESS, ALLOY, COLD ROLLED and COATED Strip Steels.

### SHARON STEEL CORPORATION *Sharon, Pennsylvania*

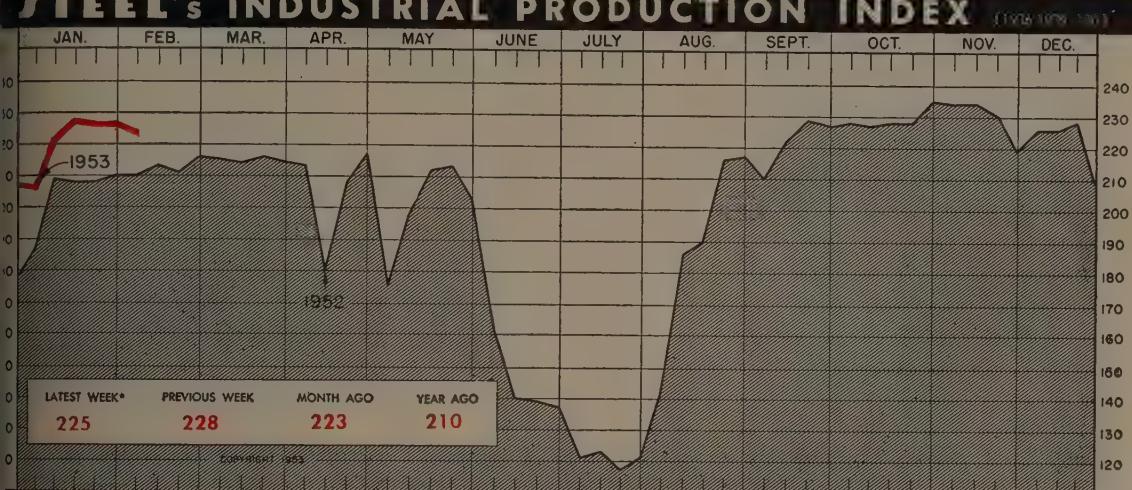
DISTRICT SALES OFFICES: CHICAGO, ILL., CINCINNATI, O., CLEVELAND, O., DAYTON, O., DETROIT, MICH., INDIANAPOLIS, IND., MILWAUKEE, WIS., NEW YORK, N. Y., PHILADELPHIA, PENNA., ROCHESTER, N. Y., LOS ANGELES, CALIF., SAN FRANCISCO, CALIF., MONTREAL, QUE., TORONTO, ONT.

For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio

SHARONSTEEL

# The Business Trend

## STEEL's INDUSTRIAL PRODUCTION INDEX



Week ended Feb. 7

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

**More workers may be available to industry when defense hirings level out. Potential labor force is increasing. Index dips as steel production drops slightly**

EMPLOYMENT, a good yardstick of economic momentum, is continuing to smash previous records for the winter season.

The Commerce department says civilian employment in the week ended Jan. 10 totaled 60,524,000 workers, the highest January figure on record. Unemployment in January had declined 0.3 per cent from January, 1952, to 1.9 million less, or only 3 per cent of the nation's total workforce. This is at employment by almost any standards.

**More Potential**—Although many manufacturers are scrambling for unskilled workers, the supply of available manpower may improve more quickly than some persons believe. Our civilian noninstitutional population of 14 years of age or over has risen 1.4 million to 110,648,000 persons during the past year. Employment, on the other hand, has climbed only 1,000 during the same period. Many persons over 14 years of age, are homemakers, or still in school or too old for most jobs. Nevertheless, the rise in potential manpower is great. This means that more persons

may be available to industry when the defense program levels out. Manpower supplies will continue to climb as the rate of industrial hirings tapers off.

**Index Edges Down**—Production is remaining near the high level attained in January. STEEL's industrial activity index in the week ended Feb. 7 edged down 3 points to 225 per cent of the 1936-1939 average. Highwater mark for January was 229 per cent in the week ended Jan. 17. A slight drop in steel production in the week ended Feb. 7 caused the 3-point decline, as workers went on strike at the Indiana Harbor, Ind., Works of Inland Steel Co. Automotive operations, freight car loadings and electricity production that week remained near the levels attained in the previous week.

### Auto Output Nears Peak . . .

Monthly output of passenger cars may level out at a "return to normal" pace in February. U. S. automakers in January raised production 45,463 units to 465,745 passenger vehicles, despite model changeovers and a two-week inventory shutdown at Kaiser-Frazer Corp.

The February total is expected to reach 486,000 automobiles, if things go without a hitch. This 486,000-unit volume — in a short work-month, too — would top the 1952 high of 479,938 passenger cars in October and would march along with the good production months of 1951.

Truck production is rumbling steadily toward the industry's goal for the first quarter. Built in January were 111,247 trucks, the scheduled volume. At that rate the truck industry will complete about 345,000 assemblies in the first three months of 1953. Authorized output is for 300,000 trucks, but upwards of 350,000 units are permissible since the industry may draw on May-June allotments of materials.

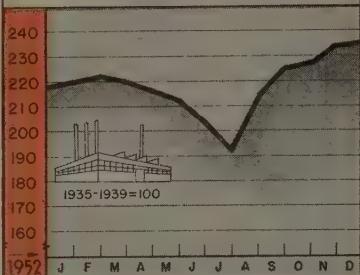
Combined U. S. and Canadian auto-truck operations are remaining around 45 per cent over the same weeks in 1952. Production in the week ended Feb. 7 totaled 148,430 passenger cars and trucks, compared with 102,406 units produced by the two nations during the comparable week in 1952.

### Manufacturers' Sales Up . . .

Manufacturers' sales in 1952 rose 3 per cent to \$276.5 billion, according to the Commerce department's Office of Business Economics. This increase reflects a gain in physical

### INDUSTRIAL PRODUCTION INDEX

FEDERAL RESERVE BOARD



### Industrial Production Index

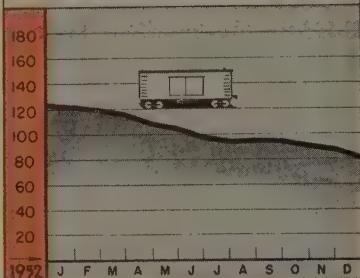
1935-1939=100

	Production		Iron, Steel		Non-ferrous	
	1952	1951	1952	1951	1952	1951
Jan.	220	221	261	255	215	224
Feb.	222	221	261	252	217	218
Mar.	220	222	262	263	218	212
Apr.	216	223	245	264	219	210
May	211	223	245	263	220	206
June	203	221	142	261	212	205
July	193	222	141	253	201	199
Aug.	215	217	241	254	212	198
Sept.	225	219	267	257	221	201
Oct.	227	218	276	261	228	202
Nov.	234	219	283	261	240	209
Dec.	235	218	288	263	245	210
Avg.	218	220	243	259	220	207

Federal Reserve Board

### FREIGHT CAR BACKLOG

IN THOUSANDS OF CARS



### Freight Car Awards and Backlogs

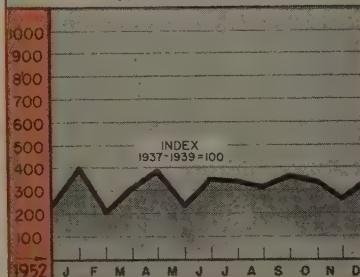
	Awards		Backlogs*	
	1952	1951	1952	1951
Jan.	5,338	26,356	120,251	144,758
Feb.	7,358	15,947	118,900	154,861
Mar.	5,619	11,271	113,854	158,619
Apr.	397	6,628	108,270	155,871
May	2,502	4,919	103,910	150,628
June	3,264	6,793	99,615	147,725
July	1,536	2,417	95,285	144,810
Aug.	4,558	1,828	95,761	139,044
Sept.	3,682	9,657	95,577	140,135
Oct.	1,423	3,464	90,708	132,792
Nov.	2,878	6,752	87,557	129,158
Dec.	1,159	3,309	80,296	123,947

Total 37,261 96,190

\*End of month.  
American Railway Car Institute

### FOUNDRY EQUIPMENT ORDERS

FOUNDRY TRADES ONLY



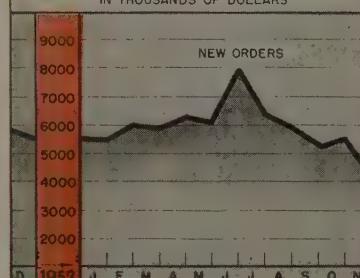
### Foundry Equipment Orders

	Index		Value, Thousands		
	(1935-1939=100)	1952	1951	1952	1951
Jan.	404.5	668.0	\$1,862	\$3,075	
Feb.	200.4	638.6	922	2,940	
Mar.	310.0	599.0	1,427	2,758	
Apr.	385.1	490.1	1,773	2,256	
May	225.2	431.7	1,037	1,987	
June	353.8	393.2	1,629	1,810	
July	243.9	390.3	1,583	1,797	
Aug.	311.6	404.5	1,434	1,862	
Sept.	365.9	346.5	1,685	1,595	
Oct.	335.8	372.4	1,538	1,714	
Nov.	258.1	305.5	1,183	1,406	
Dec.	343.3	230.5	1,573	1,061	

Foundry Equipment Mfrs. Assn.

### PUMPS - NEW ORDERS

IN THOUSANDS OF DOLLARS



### Pumps, New Orders

	In Thousands of Dollars		
	1952	1951	1950
Jan.	5,517	6,477	2,586
Feb.	6,020	6,480	2,938
Mar.	5,925	7,654	3,313
Apr.	6,354	7,583	3,376
May	6,140	6,371	3,668
June	7,957	6,852	4,153
July	6,299	8,358	4,080
Aug.	5,921	5,911	6,429
Sept.	5,258	6,552	5,191
Oct.	5,534	6,506	4,985
Nov.	4,130	5,908	5,961
Dec.	...	5,553	6,720

Total 80,175 53,400

Hydraulic Institute

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 24	Ironers	Feb. 9	Refrigerators	Feb. 2
Durable Goods	Jan. 18	Machine Tools	Feb. 9	Steel Castings	Jan. 12
Employ. Metalwkg.	Jan. 18	Mailable Castings	Jan. 12	Steel Forgings	Jan. 12
Employ. Steel	Dec. 15	Prices, Consumer	Jan. 26	Steel Shipments	Nov. 3
Fab. Struc. Steel	Feb. 9	Prices, Wholesale	Jan. 26	Vacuum Cleaners	Feb. 9
Furnaces, Indus.	Feb. 2	Radio, TV	Feb. 26	Wages, Metalwkg.	Jan. 26
Gear Sales	Jan. 26	Ranges, Gas	Jan. 18	Washers	Dec. 29
Gray Iron Castings	Jan. 12	Ranges, Elec.	Feb. 2	Water Heaters	Jan. 18

volume since prices, for the most part, eased throughout the year.

Sales of durable goods industries rose 5 per cent to \$132.8 billion. The machinery, transportation equipment, instruments and furniture industries reported sales increases from the previous year. Billings of transportation equipment, other than automotive, made the sharpest rise—nearly 33 per cent. Deliveries of metals, largely to the steel strike, declined a little from the previous year.

Manufacturers' inventories on Jan. 1, 1953, were estimated at \$43.6 billion, on a seasonally adjusted basis. This marks an advance of around \$600 million for the year. The value of inventories moved downward in the first half of 1952, but this decrease was more than made up during the second half.

### Foundry Equipment Down...

Orders for foundry equipment have apparently leveled out with the dollar volume of orders in the early days of post-Korea expansion. The Foundry Equipment Manufacturers Association says that incoming orders during December totaled \$1.6 million (see chart, left). In January, 1953, manufacturers of foundry equipment received \$3.1 million in new orders.

### Retail Sales Inch Up...

Retailers in 1952, after getting off to a bad start, chalked up sales volume 4 per cent over 1951. The Census Bureau reports that total sales of retail stores last year amounted to \$164 billion, compared with \$158 billion in 1951. During the first quarter of the year, retail sales fell 4 per cent under the corresponding months in 1951.

### Stoker Sales Decline...

Sales of mechanical stokers declined 6 per cent in 1952, according to the U. S. Census Bureau. Factory sales of all types of mechanical stokers last year totaled 22,582 units, compared with 24,900 units in 1951. Indicating perhaps a leveling-off in many defense contracts, sales of large equipment, sales of heavy industrial stokers dropped to 479 units from 770 stokers in

## BAROMETERS OF BUSINESS

INDUSTRY	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Output (per cent of capacity) <sup>2</sup> .....	97.5	99.5	100.0
Electric Power Distributed (million kwhr).....	8,140 <sup>1</sup>	8,151	7,456
Bituminous Coal Output (daily av.—1000 tons).....	1,475	1,530	1,733
Petroleum Production (daily av.—1000 bbl).....	6,530 <sup>1</sup>	6,522	6,363
Construction Volume (ENR—millions).....	\$288.5	\$599.9	\$167.1
Automobile, Truck Output (Ward's—units).....	148,430	150,289	102,406
TRADE			
Freight Car Loadings (unit—1000 cars).....	700 <sup>1</sup>	698	734
Business Failures (Dun & Bradstreet, number).....	136 <sup>1</sup>	162	134
Currency in Circulation (millions) <sup>3</sup> .....	\$29,657	\$29,592	\$28,378
Dept. Store Sales (changes from year ago) <sup>3</sup> .....	+2%	+2%	-8%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions).....	\$17,925	\$17,292	\$17,455
Federal Gross Debt (billions).....	\$267.4	\$267.3	\$259.8
Bond Volume, NYSE (millions).....	\$17.8	\$18.3	\$13.0
Stocks Sales, NYSE (thousands of shares).....	8,893	8,208	7,531
Loans and Investments (billions) <sup>4</sup> .....	\$77.3	\$77.7	\$74.0
United States Govt. Obligations Held (billions) <sup>4</sup> .....	\$31.7	\$32.0	\$32.4
PRICES			
STEEL's Weighted Finished Steel Price Index <sup>5</sup> .....	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index <sup>6</sup> .....	210.7	213.4	243.6
All Commodities <sup>7</sup> .....	109.3	109.5	113.5
All Commodities Other Than Farm and Foods <sup>7</sup> .....	112.7	112.8	114.6

\*Dates on request. <sup>1</sup>Preliminary. <sup>2</sup>Weekly capacities, net tons: 1952, 2,077,040; 1953, 2,254,459. <sup>3</sup>Federal Reserve Board. <sup>4</sup>Member banks, Federal Reserve System. <sup>5</sup>1935-1939=100. <sup>6</sup>1936-1939=100. <sup>7</sup>Bureau of Labor Statistics Index, 1947-1949=100.

1951. Despite considerable home-  
building in 1952, homeowners  
showed increasing dislike to pay  
higher prices for coal; thus, sales  
of residential bituminous stokers  
dropped 25 per cent in 1952.

### House Sales Jump ...

Housewives are snapping up au-  
tomatic dryers and passing up  
washers and ironers. Answer to  
this is that the market for dryers  
is probably much further away  
from saturation. The American  
Home Laundry Manufacturers' As-  
sociation says factory sales of au-  
tomatic tumbler dryers in 1952 rose  
per cent to 614,677 units. Sales  
of standard-size household washers  
climbed 6 per cent to 3,301,123  
units during last year. Sales of  
ironers in 1952 plunged 27 per cent  
to 202,143 units.

### New Companies Increase ...

Formations of new companies  
in 1952 rose 10.9 per cent over  
the previous year, but remained  
below the first three years fol-  
lowing World War II. New stock  
corporations chartered in 1952 total-  
ed 92,758, compared with 83,649  
enterprises in 1951 and 92,925 new  
corporations in 1950, says Dun &  
Bradstreet Inc. Company forma-  
tions reached a peak 132,916 dur-

ing 1946—followed with 112,638  
firms in 1947, 96,101 firms in 1948  
and 85,491 new incorporations  
in 1949.

### Electricity Output Strong ...

Distribution of electric energy  
is running about 7 per cent over  
the comparable weeks in 1952. Ed-  
ison Electric Institute says the na-  
tion's utilities in the week ended  
Jan. 24 produced 8.1 billion kilo-  
watt-hours, compared with 7.6 bil-  
lion in the comparable week of  
1952. Electricity output in the  
Central Industrial region of the  
U. S. has been 8 to 9 per cent over  
the same weeks in 1952.

### Trends Fore and Aft ...

Wholesalers' sales in 1952 de-  
clined \$1 billion to \$106 billion.  
Physical volume, however, rose  
slightly in 1952 as declining prices  
accounted for the lower dollar vol-  
ume. . . . Freight car loadings are  
still lagging about 5 per cent behind  
the comparable weeks in 1952. . . .  
Wholesale prices declined 3.7 per  
cent in the past year. . . . Bank clear-  
ings are rising 2.7 per cent over  
the comparable weeks in 1952. . . .  
Production of truck-trailers totaled  
60,000 units in 1952. . . . Business  
failures are slightly under company  
mortalities in the comparable  
weeks of 1952.

**"I Say Sheet Coil"**



Sheet Coiled  
by High Speed  
Winding on Continuous  
Wide Multiple Stand  
Walls

Buy to Specified with  
Precision Quality  
Controlled Steel

**Kenilworth**  
Steel Co.

**THIS IS  
C&P  
THINSTEEL**  
TRADE MARK

**COLD ROLLED STRIP STEEL**

A Quality Product Precision  
Extruded and Annealed  
Reversing Mill Process  
Special Ground Finish  
Two Surface Finish and  
Close Accuracy  
and Maximum Quality Strip Steel

**Kenilworth**  
Steel Co.

**"I Say Thinsteel"**



Which kind of Cold Rolled Strip  
Steel is best for You?

### CONSIDER SHEET COIL

—if variations in physical characteristics  
are permissible.  
—if fairly heavy oversize gauge varia-  
tions are not objectionable.  
—if the fabricating operations are not  
too complicated and do not require intricate  
expensive dies.  
—if a fine surface finish is not essential.  
—if a good base for paint or enamel is  
desired.  
—if you do not object to some "square  
footage" loss due to oversize variation.  
—then Sheet Coil will probably be the  
most economical material for the job.

### CONSIDER THINSTEEL

—if you must have a high degree of uniformity  
of chemistry and physical properties  
—and precision gauge tolerances.  
—if you wish to keep die wear low, no  
oversize gauge variations.  
—if you require a fine finish or a better  
base for plating.  
—if you want maximum yield for "most  
finished parts per ton."  
—if you want selected tempers for maximum  
strength and lightest weight.  
—then you'll find Thinsteel the most  
economical material by far.

No Argument  
Here....  **Kenilworth**  
Stocks Both

You can always count on Kenilworth helping  
you get the right steel for your require-  
ments. Order Sheet Coil or Thinsteel and  
notice that each coil carries an identifying  
tag as pictured above. Call on Kenilworth,  
too, for your needs in Stainless Sheets or  
flat rolled Spring Steels (Annealed or  
hardened and tempered).

**K**  
**Kenilworth**  
**Steel Co.**

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IT'S PERFORMANCE THAT COUNTS

...there's more  
to a champion  
than the tape  
measure shows!



**Champion Pitcher . . .**

he keeps control  
in the tight spots!



**Average Pitcher . . .**

he may measure the  
same . . . but he loses  
the tight games.

## HARDTEM DIE BLOCKS

perform like "champions"  
in your production line!

Heppenstall Hardtem Die Blocks perform like "champions" because they possess those extras that result in superior quality. Their patented steel analysis resists softening and heat checking in service. Records from plants using Hardtem Die Blocks prove the following benefits for production:

- ★ Long life of dies
- ★ Holding of true dimensions
- ★ Less down time
- ★ Longer production runs
- ★ Lower overall die cost

It will pay you to try Hardtem Die Blocks. Call Heppenstall Company, Pittsburgh 1, Pa. Sales Offices in principal cities.



**Heppenstall**

*...the most dependable name in die blocks*

# Men of Industry



D. RUMSEY PLUMB  
... president, Fayette R. Plumb Inc.



PAUL E. KELLY  
... Superior Tube Co. V. P.-treasurer



BENNETT BURGOON JR.  
... div. sales mgr. at Kennametal

Rumsey Plumb now heads Fayette R. Plumb Inc., Philadelphia. He succeeds his father, Fayette R. Plumb, who served as president for 20 years and is now chairman of the board. Frank L. Campbell was elected executive vice president and sales manager; Frank P. Green, vice president and merchandise director; Calvin P. Bascom, vice president and general manager of the Louisville plant; William D. Plumb, treasurer and secretary; and George R. Beck, assistant secretary.

John F. Colvin was elected vice president and treasurer, Consolidated Engineering Corp., Pasadena, Calif. He is now co-ordinating activities of Consolidated's recent acquisition, Consolidated Vacuum Corp., Rochester, N. Y., with those of the parent company in Pasadena. The new corporation will be an independent operation for manufacture and sales of high vacuum equipment and high vacuum systems engineering.

Born Engineering Co., Cleveland, appointed James J. LaSalvia president; Peter T. Borton vice president; George W. Herzberg secretary; Philip E. Scott treasurer; Vernon Kotz, assistant treasurer.

Clinton M. Dallas was named manager of manufacturing control at Republic Aircraft Corp., Dallas.

Paul E. Kelly was named vice president, Superior Tube Co., Norristown, Pa., and continues as treasurer. Charles E. Pugh was named secretary in addition to his duties as assistant treasurer and comptroller. James C. Turner becomes assistant secretary and assistant treasurer.

Walter DeRoche was named sales manager and chief tool engineer of Abco Tool & Die Co., Madeira, Ohio. In the tool and die business for over 30 years, he has been for the last five years in charge of the tool division, engineering and sales of Hamilton Tool Co.

Columbia Steel & Shafting Co., Pittsburgh, appointed Ross Saylor, sales associate. He previously was with Edgecomb Steel Co. of New England as a director and general manager at Nashua, N. H.

Rodney Hunt Machine Co., Orange, Mass., appointed Langdon M. Phillips, assistant sales manager. He has been with the company for the last four years, and has served as field sales manager.

T. F. Boyle, assistant to district engineer, Alameda, Calif., works, Bethlehem Pacific Coast Steel Corp.'s fabricated steel construction division, was promoted to works engineer.

Bennett Burgoon Jr. was made sales manager, metalworking division, Kennametal Inc., Latrobe, Pa. He has been serving as assistant to the company's general sales manager.

In the R-P&C Valve Division, American Chain & Cable Co., William Wagner, New York district sales manager, was transferred to Reading, Pa., as a member of the general sales staff. Jerome V. Gasso was made district sales manager at New York, and Edward A. Antonelli district sales manager, Atlanta.

Hobart E. Switzer was appointed purchasing agent of Electric Regulator Corp., Norwalk, Conn. He was with Diebold Inc., Flofilm Division.

Jay Electric Co., Detroit, appointed L. A. Williams vice president in charge of production; C. P. Fletcher vice president-director of sales and engineering; John J. Weaver assistant secretary and treasurer; and Earl W. Henry supervisor of material and purchases. Hugo Kummer is plant superintendent.

Chain Belt Co., Milwaukee, made the following appointments in its Baldwin-Duckworth Division. Edward M. Rhodes was named assist-

ant to the general manager, **Roland V. Poisson** assistant sales manager, and **William E. Kennedy Jr.** supervisor, automotive timing chain sales.

**Electro Metallurgical Co. of Canada Ltd.**, unit of Union Carbide & Carbon Corp., Toronto, appointed **G. O. Loach** assistant manager of its Welland plant. He has been with the company since 1945 and a director and vice president since 1951.

**Marsh Steel Corp.**, North Kansas City, Mo., designated **W. Richard Means** of Denver as a director.

**Robert E. Bartley**, former chief inspector in the methods department of **F. E. Myers & Bro. Co.**, Ashland, O., was named to the newly created job of quality control manager.

**Donald C. Burnham** was appointed assistant chief engineer in charge of body, sheet metal and chassis design at **Oldsmobile Division, General Motors Corp.**, Lansing, Mich. **Lowell A. Kinigh** was named assistant chief engineer in charge of engine, transmission, experimental test and development. Succeeding Mr. Burnham as manufacturing manager is **Robert T. Rollis**, formerly chief inspector.

**Furnas Electric Co.**, Batavia, Ill., appointed **Walter A. Meyer** general sales manager in charge of sales and publicity.

**Emil A. Vierow** was made superintendent of the Youngstown district fuel and power department of **Youngstown Sheet & Tube Co.**

**F. J. Sherwin** was elected president, **Chicago Hardware Foundry Co.**, Chicago, to succeed his brother, the late **Edward B. Sherwin**.

**Gordon C. Brown**, formerly sales manager, Fibron (Plastics) Division, **Irvington Varnish & Insulator Co.**, Irvington, N. J., was promoted to vice president of the company and general manager of the division. **Bernard M. Hoey** succeeds as sales manager.

**Earl K. Loverud** was appointed general sales manager, **Bready Tractor & Implement Co.**, Solon, O. He will have headquarters in Cleveland. Mr. Loverud has been in charge of sales of Milwaukee Equipment Mfg. Co.



**WILBUR C. STAUBLE**  
... new president of Holo-Krome Screw



**PAUL B. BEST JR.**  
... joins Hupp Corp.

**Wilbur C. Stauble** was elected president and chief executive officer of **Holo-Krome Screw Corp.** and a director and member of the executive committee of the parent company, **Veeder-Root Inc.**, Hartford, Conn., to fill vacancies caused by resignations of **United States Senator William A. Purtell**. Mr. Stauble, who with Mr. Purtell and others founded **Holo-Krome Screw Corp.** in 1929, has been its executive vice president since 1942.

**A. Leo West** was elected treasurer, **Clearing Machine Corp.**, Chicago, to succeed **J. R. Bartizal**, executive vice president, who has been acting as treasurer in addition to his other duties.

**B. E. Ball** was appointed cashier in the treasury division of **Jones & Laughlin Steel Corp.**, Pittsburgh, to succeed **E. L. Hendrickson**, retired.

**Walter H. McCann**, with **National Supply Co.**, Pittsburgh, since 1936, was appointed supervisor of tubular sales for its eastern division. He succeeds **Walter Wirth**, retired.

**Walter F. Tobias** was appointed assistant works manager at the Kenosha, Wis., automotive division of **Nash-Kelvinator Corp.** **E. D. Stinebower**, quality director, was named plant general superintendent succeeding Mr. Tobias.

**Arnold W. Johnson** was elected treasurer, **Economy Engineering Co.**, Chicago, manufacturer of materials handling equipment.

**Paul B. Best Jr.** joined **Hupp Corp.** Detroit, as general sales manager. He will have executive direction of all Hupp automotive sales, which includes the Hupp-ABF Regal Products Division, Detroit, and the Globe Stamping Division, Cleveland. His headquarters will be in Detroit. Mr. Best has been vice president in charge of series model sales at Redmond Co.

New positions in the factory sales organization of **Alemite Division**, **Stewart-Warner Corp.**, Chicago, are filled by **Huntington Eldridge** as assistant distribution sales manager; **H. J. Howerth** as head of farm market sales development and **G. W. Mullin**, who joins factory sales as a national account representative.

**May-Fran Engineering Inc.**, Cleveland, appointed **Walter A. Stuhrling** regional sales engineer in charge of its new midwestern office in Chicago.

**C. F. Herbold** assumes the newly created position of director of industrial relations at **Jack & Heintz Inc.**, Cleveland.

**Clair C. Stephens** was appointed manager, welded order department, **Spang-Chalfant Division**, **National Supply Co.**, with offices in Pittsburgh. He succeeds **L. C. Bechtel**, retired.

**J. S. Liefeld** was made factory manager of **Marquardt Aircraft Co.**, Van Nuys, Calif. He previously



John, this building of mine holds a

cost-cutting

# Tip-Off

from ONE BUSINESSMAN TO ANOTHER"

What is it?" asked John, a prominent appliance manufacturer.

The contractor answered, "Something: don't take your fasteners granted!"

An RB&W man showed me a switch in fasteners could make me make field connections more economically.

He suggested switching from rivets to high strength bolts. They're more than rivets initially, but assembled cost is much lower. Men work faster than with rivets. The building goes up faster."

You, too, can find a cost-cutting from on from this story, whether in construction\* or any other industry.

ORAL: Look to your fasteners an often overlooked opportunity to reduce costs, and strengthen your competitive position. New in-

ventions, like RB&W's SPIN-LOCK Screw, may prove more efficient than the fasteners you're now using. Or you may save by the stepped-up production you get from using the finest fasteners . . . RB&W bolts, screws, nuts and rivets of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W at Port Chester.

RB&W—The Complete Quality line. Plants: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, Oakland. Sales agents: Portland, Seattle. Distributors from coast to coast.

**RUSSELL, BURDSALL & WARD  
BOLT AND NUT COMPANY**

\*If you're interested in construction, write RB&W at Port Chester for a free reprint of the recent article, "No More Riveting."



ALEXANDER B. FREEMAN  
... American Metal Hose V. P.

was with Aircraft Metal Forming Co.

**Alexander B. Freeman** was appointed vice president, **American Metal Hose Branch**, American Brass Co., Waterbury, Conn. Since 1950 he has been general manager.

**Texas Eastern Transmission Corp.**, Shreveport, La., appointed **H. M. McDonald** general superintendent and **Paul L. Hughen** pipeline superintendent. **Carl R. Sisson** replaces Mr. Hughen as manager of the corporation's division three in West Chester, Pa., and **Murrell Carlisle** replaces Mr. Sisson as assistant manager of that division.



L. A. WATTS  
... eastern div. sales mgr., CF&I

**L. A. Watts** was named general manager of sales of the eastern division, **Colorado Fuel & Iron Corp.**, New York. Since 1951 he has been assistant general manager of sales, Wickwire Spencer Steel Division.

**White Motor Co.** placed **P. E. Tobin** in charge of a new North Atlantic region with headquarters in New York. He has been manager of the New York metropolitan region for the last 12 years. His enlarged territory includes all of New England, Albany and Utica, N. Y., in addition to the metropolitan area in New York.



HOWARD C. WILLIAMS  
... gen. sales mgr., Continental Steel

**Howard C. Williams**, sales manager in the sheet division, was promoted to general sales manager, **Continental Steel Corp.**, Kokomo, Ind. **F. A. Lewis**, sales manager, chain link and ornamental fence division, advances to sales manager, merchant trade division.

**Robert M. Griffin** was named sales representative for **Automotive Transportation Co.** at Phoenix, Ariz.

**Harold Raynor** was named administrative director, missile and control equipment departments,

(Please turn to Page 104)

## OBITUARIES...

**Irving F. Wolfgram**, 60, assistant to executive vice president and superintendent of coke ovens and blast furnaces, **Alan Wood Steel Co.**, Conshohocken, Pa., died Feb. 1.

**Daniel Gurney**, 52, vice president and director of engineering of **Marlin-Rockwell Corp.**, Jamestown, N. Y., died Feb. 3.

**William W. Wells**, 51, division engineering chief of **Atomic Energy Commission's Portsmouth, O., area**, died Feb. 2.

**William Beaser**, president, **Whitmore Mfg. Co.**, Cleveland, died Feb. 2.

**Charles A. Booth**, 77, executive vice president, **Buffalo Forge Co.**, Buffalo, died Jan. 31.

**Samuel Koffsky**, chief engineer, **Simmons Machine Tool Corp.**, Albany, N. Y., for 16 years, died Jan. 15.

**Theodore M. Berry**, 51, a section engineer of **General Electric Co.**, Schenectady, N. Y., who twice won the company's Charles A. Coffin award, died Feb. 3.

**Walter J. Andree**, general superintendent of **Canada Foils Ltd.**, Toronto, Ont., died Feb. 5.

**G. Wesley Nutter**, 41, manager of the Kent street plant of **General Electric Co.** in Utica, N. Y., died Feb. 2.

**L. Harold Clark**, 75, one of the founders of **J. L. Clark Mfg. Co.**, Rockford, Ill., died Feb. 2.

**Stewart P. Trench**, 58, president

and publisher of **American Metal Market**, died at his home in New York Feb. 5.

**Raymond E. Ginn**, 57, vice president and general sales manager, **James H. Matthews & Co.**, Pittsburgh, died Jan. 24.

**William A. Fannon**, 89, head of **Magan Iron & Steel Co.**, Duluth, died at Appleton, Wis.

**Howard W. Smith**, 82, chief engineer, **Aetna Standard Engineering Co.**, Ellwood City, Pa., died Feb. 1.

**Charles B. Fox**, 78, retired vice president, **Aluminum Co. of America**, died Feb. 2 in St. Louis.

**Gerald E. Stedman**, 56, a business writer and contributor to industrial magazines, died Jan. 21. He resided in Waukesha county, Wis.

Hand Operated Air Valves  
Dumping Poured Molds onto  
Apron Conveyor in Foundry

## Quick-As-Wink Control Valves

un-paralleled  
performance  
and dependability

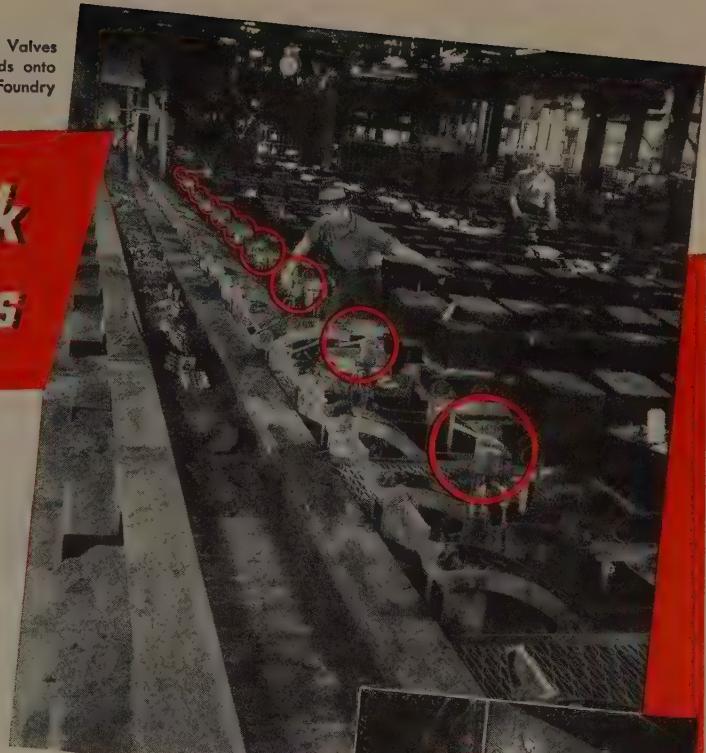
no after hours Siss-s-s-s

That low sizzling noise you hear out in the plant, after the work force has gone home, is there during the day too, only you can't hear it then. It's air. Seeping out through inferior valves it wastes from \$5.00 to \$500.00 per month — and — leaky valves mean sloppy machine control; danger of "repeating"; possible injury to the operator; or a break-down involving costly repairs, material spoilage, lost production and customer ill-will.

Stop that sizzling by installing Quick-As-Wink valves on your air and hydraulic controls. Positive and fast-acting Quick-As-Wink valves are designed and built with U-shaped packers that are expanded by pressure and seal tightly, preventing leaks, and minimizing the danger of breakdowns and tie-ups. Recognized by operators, foremen and superintendents everywhere for unsurpassed air economy, high efficiency, low maintenance and long, trouble-free satisfactory performance.

# Quick-As-Wink AIR AND HYDRAULIC Control Valves

Hand, Foot, Cam, Diaphragm and Solenoid Operated  
by C. B. HUNT & SON, INC., 1911 East Pershing St., Salem, Ohio



Quick-As-Wink Solenoid Operated  
Air Valve used for Clutch and Brake  
Control on Large Press



Air Valves used for Raising and  
Lowering Entrance Doors



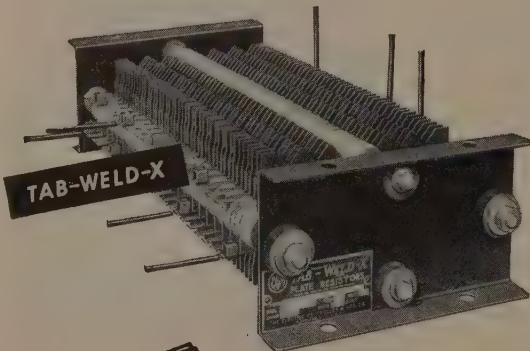
**low priced  
yet...it  
includes  
Preventive  
Maintenance**

"F. O. B." (FREE-OF-BURNING)

Resistors get little attention, because they are usually mounted overhead or in similar hard-to-reach locations. Clamping-nut pressure slackens under alternate heating and cooling. Formerly, under the reduced pressure, OHMIC value changed, burning occurred and often was *not* noticed until damage took its toll.



*But* — note how resistor troubles are now eliminated in the EC&M TAB-WELD design! The current-carrying path is continuous — and is *independent* of end clamping-nut pressure. Convenient tap-plates simplify tap-shifting — make possible small adjustments in resistance value, because plates are closely spaced. Also, these alloy-steel resistors are corrosion-resisting — and have negligible resistance-change between cold and maximum working temperatures.



SPECIFY  
BULLETIN

942

EC&M Welded  
Plate Resistors



**THE ELECTRIC CONTROLLER & MFG. CO.**  
2698 EAST 79TH STREET

CLEVELAND 4, OHIO

**SOMETHING FOR NOTHING**—Simultaneous brazing and carburizing in the same salt bath is a natural. According to Ajax Electric Co. carburizing baths are ideal for brazing. The salt itself acts as a flux both for the brazing material and the steel. If after proper preparation for brazing the assembly is immersed in a carburizing bath, brazing takes place at the same time the parts are being carburized. Secret of brazing and carburizing steel subassemblies at the same time in the same bath is the ability of the molten salt to control temperature within 5° F over every part.

**MORE MILES PER WHEEL**—Does your operation entail the grinding of carbide-tipped cutters? If it does you are probably also putting a chip breaker or groove in some of them with a diamond wheel. There's an interesting sidelight on the selection and application of these wheels. By avoiding a wheel that's actually too wide for the job, you can save on initial cost and actually get longer wear out of the wheel. It all adds up to another good way to save on industrial diamonds. p. 72

**GALLIUM GOES BEGGING**—Despite its unique properties, gallium has yet to find a significant use. One of the weirdest performers in the family of metals, it melts at about 86° F but doesn't boil until 3600° F or higher. Like water it expands on solidification. It shows marked differences in electrical resistivity and coefficient of thermal expansion along the direction of the three axes of its crystallographic structure. Its electric resistivity variability is believed greater than for any other metal. It emits electrons at extremely low temperatures. Some of the tasks for which gallium is well suited are already satisfactorily performed by other metals or methods. Probably the biggest obstacle to wider use of gallium is its price of over \$1000 per pound. If there were a market the price could be lower but if the price were lower a market might be found.

**GERMANIUM HUNT**—A search is on for additional sources of the costly metal germanium for use in radar and other electronic equipment of the Armed Forces among the ash pits of large industrial users of coal. Bureau of Mines is doing the work at the request of and in co-operation with the Signal Corps Engineering Laboratories. Search is concentrated on central station power plants that burn more than 100 million tons of coal yearly. The rare element is now produced in small amounts as a by-product of zinc refining. It also appears in minute quantities in many American coals but its recovery is uneconomical. The best method is to recover from the ash. The compound recovered from the ash can be converted into metal by carefully controlled processes. Most popular uses of germanium are in electronic diodes for rectifying high frequency

circuits and in the recently developed transistors. Most of domestic supply comes from Eagle-Picher's plant in Henryetta, Okla., and only one pound is recovered from every 2.5 million pounds of zinc ore handled. Annual output is currently about 6000 pounds but it's predicted the electronics industry will need 40,000 pounds yearly by 1956.

**BRIGHT SPOT IN ALUMINUM**—If you want to improve plated finishes on aluminum, check your surface conditioning treatment. To get the most corrosion resistant electroplates on aluminum, using zinc immersion, it's necessary to obtain good coverage with the thinnest possible zinc film. Zinc immersion procedure is now considered the most practical and economical method for plating on aluminum. It requires less time and equipment and is less critical to control than other methods. Good commercial plating on aluminum based on the zinc-dip treatment is an everyday practice. p. 76

**SAVES NICKEL**—A new type manganese-chromium stainless with only 1 per cent nickel is doing a good job at The Budd Co. Designated as TRC because of its first commercial application as a trailer-rail car steel this new grade stainless has the following composition: 15.0 per cent chromium minimum; 16.5 manganese nominal; 0.10 carbon maximum; 1.0 nickel maximum; and 0.15 nitrogen nominal. TRC was substituted for previously used 18-8 type 301 without making tooling changes of any sort. Strength-wise it is the equivalent of 301. The test panels exposed in severe industrial atmosphere for a year have shown no evidence of attack. In salt spray TRC showed very slight attack, a shade less than straight chromium type 430, while 301 showed no signs of attack.

**AUTO EYES ON PLASTIC**—Use of some plastic for automobile bodies is causing more than a gentle ripple on the pool of car-making knowledge. Plastics won't be ready for the mass production car for some time yet, but all producers are eyeing the idea for the future. As one authority says, "It has one big advantage . . . It can be formed and shaped without the use of extremely expensive molds and heavy plant equipment." That alone will lead to extensive study. p. 79

**SMALLER AND SMALLER**—Miniaturization of control motor generator and motor generator gear train combinations for servomechanisms took another big step with the latest development by Transicor Corp., New York. Their new 400-cycle motor generator weighs only 4 ounces and measures 0.9 inch in diameter. Phase voltage of the motor is 26 volts with a maximum stall power of 2.6 watts per phase and a minimum stall torque of 0.3 inch-ounce. Output of the generator is 0.34 volts at 1000 rpm.

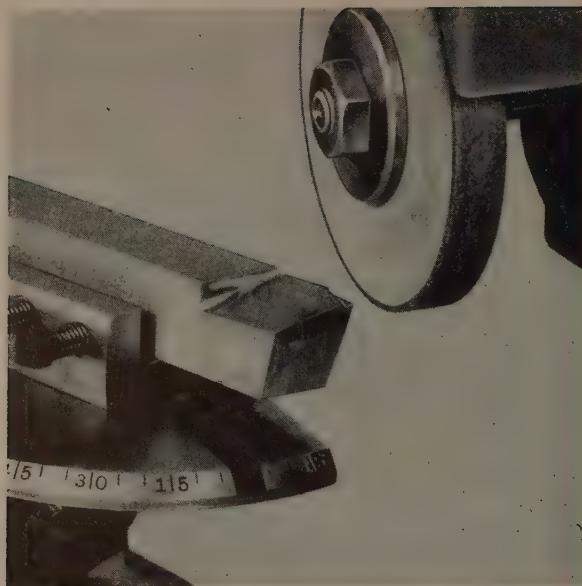
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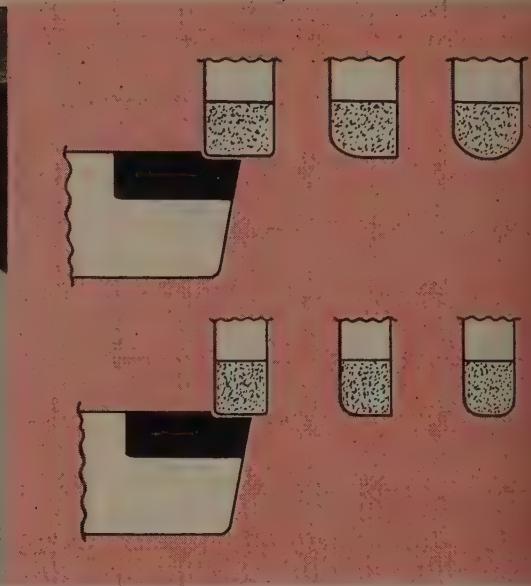
NEWS PRODUC

PRODUCTION

ENGINEERING



Carbide tool tip mounted under a diamond wheel for chipbreaker grinding. In this type grinder the wheel is power driven but the feeds are applied manually



Narrower wheel saves on initial wheel cost and gives longer wheel life. Crown at the center of wheel face is held to a minimum as in bottom v

# Right Wheel Cuts Diamond Consumption

**Chipbreaker grinding in carbide cutter tips is an operation where wheel life is important. Width of wheel, coolant and feeds all have an effect on this life**

EFFORTS to conserve industrial diamonds are directed into every nook and cranny of the diamond-consuming operations. One which has received little attention is the grinding of chipbreakers on cemented carbide cutting tools.

Chipbreaker grinding is the operation of grinding a groove or step, usually the latter, into the top surface of a carbide tool. This groove or step curls and breaks the chip into safe, convenient lengths.

**Hand Fed**—Although the grinding may be done on a surface grinder or cutter grinder, it is more generally performed on a chipbreaker grinder. This is a miniature surface grinder and has similar controls for downfeed, crossfeed and table traverse. Only the wheel spindle is motor driven; all other movements are manual.

Wheels used for chipbreaker

grinding are usually 6 inches in diameter. Using a smaller wheel on a machine built for a 6-inch wheel results in low peripheral speed of the wheel. This adversely affects wheel life and form-holding quality, both these features are of paramount importance.

**Thinner Wheel**—Proper wheel thickness will assist in form-holding. Chipbreaker width is often  $\frac{1}{8}$ -inch and in grinding practice a wheel twice as wide as the chipbreaker— $\frac{1}{4}$ -inch—is sometimes used.

By reducing the wheel thickness to  $\frac{3}{16}$ -inch—or  $1\frac{1}{2}$  times as wide as the chipbreaker—a saving in initial wheel cost, as well as increased wheel life is realized.

**Smaller Crown**—With this smaller wheel, the center gets twice the wear of either corner. The crown at the center of the wheel face is held to a minimum. A flatter wheel

face results and less truing of wheel is necessary.

When it becomes necessary to condition a chipbreaker wheel to move the crown and restore a flat face, three methods are available. The wheel may be cylindrically ground between centers; it may be dressed on its own spindle using a tool-post grinder or it may be brought to proper condition using one of the various brake-retarder wheel dressers.

**The Rub**—These brake-retarder dressers consist of a dressing wheel in a small fixture which is placed on the machine table behind the diamond wheel. The wheel drives the dressing wheel and the action is retarded by a brake. The dressing action brings the chipbreaker wheel into acceptable condition.

Most common diamond wheel used in chipbreaker grinding is

By JOHN W. RIPPLE

Sales Engineer  
Carborundum Co.  
Niagara Falls, N. Y.

noid type. Resinoid diamond wheels have excellent form-holding abilities, particularly in the hard grades, and provide fast cutting action.

**cautious Advance**—When resinoid wheels are used for grinding, downfeeds should not exceed 0.001-inch per pass—0.0005-inch is preferred. Table traverse may be rapid. Most chipbreaker machines are designed for drip or wick coolant supply, hence a flood of coolant is not always practical. Use of the wick or a mist cooling system is, however, much better than no cooling.

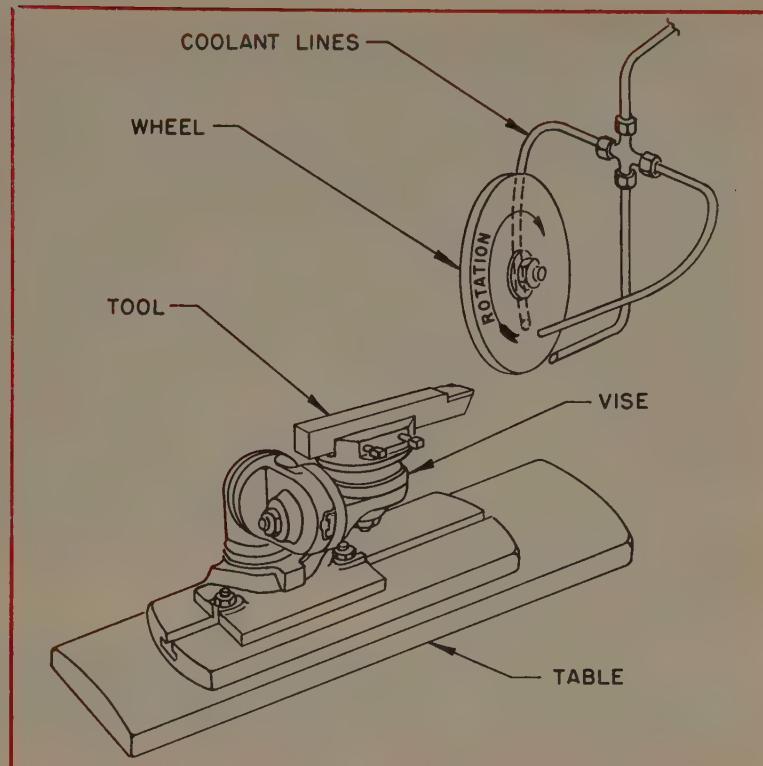
considerable interest is currently being exhibited in diamond wheels of the metal bond type for chipbreaker grinding. The commonly-used grades of metal bond wheels are too hard for this application, however, and it is necessary to use a more free-cutting wheel such as our wheel in grading 10-K100-M.

**Warning** — Three precautions must be observed in order to obtain optimum performance: First, an adequate supply of coolant, in a circulating pump system, is required. Drip, wick or mist systems do not furnish adequate cooling. The wheel must not be crowded. Speed and traverse should be adjusted so that the wheel can take and hold itself cut-free.

The wheel must be cleaned with a brass stick often enough to keep it open and free cutting.

**less Gum**—Thin oil is preferred over soluble oil and water as the coolant for chipbreaker grinding for two reasons. First, it keeps the wheel face clean and therefore free cutting, while soluble oil tends to load the wheel face. Second, thin oils have a slower heat transfer rate than soluble oil and water mixtures and do not tend to quench and heat shock the wheel.

**two Ways** — One method of grinding a chipbreaker is to position the tool in an adjustable vise and the diamond wheel and feed the wheel down into the cut in



Arrangement for supplying coolant in chipbreaker grinding shows fluid directed at wheel from three directions. A nozzle is behind wheel; and one on each side

0.0005-inch increments. Table traverse is fairly rapid. To cut a chipbreaker 0.020-inch deep requires about 40 passes.

Another satisfactory method for use with diamond wheels is to grind the entire chipbreaker at a single pass. The tool is properly positioned in the vise and the wheel is fed down the full depth of cut before it is brought into contact with the tool.

**Light Touch**—The table is then slowly traversed under the wheel with fingertip pressure. Since only one pass is taken, total time is not increased. Both resinoid and metal-bonded diamond wheels have been successfully used with this method.

Special precautions must be observed when using this method. Since the wheel is in continuous contact with the tool for an extended time, considerable friction results and heat is generated. A pump coolant system must be used, supplying a generous stream into the cut.

**From Three Sides** — Good arrangement for supplying the cool-

ant is shown in the illustration. One nozzle supplies coolant behind the wheel and a nozzle is located on each side. Splash guards must be used and direction of wheel rotation at the point of contact should be the same as that in conventional milling—that is up and away from the work.

Because the wheel contacts the work only once and is not forced through the cut, wheel life is greatly increased, corner-holding ability of the wheel is improved and production rates are maintained.

**Heavy Feed** — Silicon carbide resinoid wheels are used to a limited extent for chipbreaker grinding. They're applied where it is not essential to hold a sharp corner in the bottom of the chipbreaker groove.

When using silicon carbide resinoid wheels for grinding chip-breakers it is essential that fairly heavy downfeeds of 0.003-inch to 0.005-inch be employed. The wheel should not be permitted to dwell but should be traversed across the work at approximately 30 fpm.

Help to Keep  
this Plant  
Clean & Orderly



Web plates whose edges have been scarfed before assembly are tack welded together, to skin plate before permanent joining by manual hidden arc method

## Manual Hidden Arc Lowers Fabricating Time

**Lays down bead four to five times as fast as hand arc welding methods. Welds with deep penetration and little stress are achieved on these control gates for dams**

FABRICATION of dam gates and accessory equipment for control of water flow is largely an arc welding operation at Phillips & Davies Mfg. Co., Kenton, O. They save an estimated 500 manhours on a single job and get better welds by keeping hand arc welding to a minimum and using manual hidden arc methods.

Fully automatic arc welding has not been done by this company because most of the weldments are of unusually large size and cannot well be moved to a fixed machine. With manual hidden arc welding, however, it is a simple matter to bring the welding gun into favorable position for nearly all welds save those that must be made in

vertical, overhead or other positions where the granular flux cannot be kept in place to cover and hide the arc.

**Deep Arc Penetration**—Phillips & Davies estimate that fully 65 per cent of the total welding on structures is done by semiautomatic equipment. Electrode wire as well as flux are fed automatically but the gun is moved by hand. The high current (up to 600 amp) carried by the 5/64-inch electrode wire results in a high current density which produces a deeply penetrating arc.

Even when so called egg crate (cellular) structures such as are shown in the photos are employed, a large part of the welding is of

By **JAMES QUIGLEY**  
District Engineer  
Lincoln Electric Co.  
Cleveland

this type and relatively few shielded electrodes of the assembly (and these of the type readily made with an overhead crane) are needed.

**No Masks**—With hidden arc welding there is much less smoke than when coated rod is used. Hand welding and operators do not have to wear masks. This makes for convenience, and safety is promoted because the operator can see everything but the arc itself, which is hidden by the flux and need not be seen.

Standard welding guns are normally used with a cone about one inch long for holding and feeding flux but, where webs close together or other confined conditions make it impossible



The structures are lifted from horizontal to vertical position to ease welding job during fabrication. This cuts need for overhead welding to minimum

the regular cone, a much shorter one is applied. With it welding is done in close quarters and the operator merely has to be filled more than a larger one. In general, welds in confined spaces are not anyway and a small cone is enough flux to complete such welds.

**Start with Skin Plate**—In the photos are shown major components of the emergency gate in process of fabrication for the Gariep dam. This gate is made in halves that weigh about 88,000 pounds each. Skin plates for the halves are  $1\frac{3}{4}$  inches thick, sure about  $13 \times 21$  feet and about 19,500 pounds apiece. As the skin plate is subjected to hydro pressure, it has to be stiffened to resist deflection. Major stiffening elements are webs set at angles to plate in cellular arrangement and heavy flange bars 12 inches thick and 12 inches wide. The latter are welded across the outer edges of the webs after other plates joining the web plates are completed.

**Structure Is Lighter**—Such a structure, although having a great weight, is lighter than if reduced by structural shapes, partly because no angles have to be applied and riveted at joints, webs are relatively thin and the metal disposed to best advantage in stiffness and for resisting the stresses imposed in service.

Fabrication starts with the skin plate set in horizontal position. These plates, which are mostly  $1\frac{3}{4}$ -inch thick, have edges previously scarfed to provide V-grooves at joints to be filled with weld metal.

**Welding Procedure**—Tack welded cellular structure is permanently welded and framework is then added around the contour; heavy stiffening flange bars are applied across the back edges of the webs that form the cellular structure.

Many joints are welded with the operator having part of his body inside the cells so that he can reach the weld areas. When working at high levels, scaffold boards are used. They are supported by forged brackets made to hook over the heavy bars and can be seen in the photo.

**Fillets and Flux**—Many of the welds are made with  $\frac{1}{2}$ -inch fillets but fillets of  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$  and  $1\frac{3}{4}$ -inch sizes are readily produced where specified as they are on the gates here pictured. Often more than one pass is needed to deposit the required amount of metal in making the welds but within limits, the size of fillet for a single pass can be varied by moving the gun at slower or faster speed.

As welding proceeds, granular flux is deposited from the cone and completely covers the arc. Only the flux next to the weld is fused into slag, the remainder being



With the manual hidden arc method, the operator needs neither mask nor gloves. Flux powder shields the arc and only a small portion is fused

picked up by suction hose, sifted and reused. Fused flux is very easily chipped or wire brushed off the weld or loosens itself in cooling.

Standard welding guns hold as much flux as is needed for welds as long as they are normally made without a stop but refilling is quickly done and welds can be continued to any length without detriment.

**Weld Stresses Nil**—All welding results in setting up some stresses in the weldment, but, with the hidden arc process the flux slows cooling and in many cases the stresses are of little or no consequence. If specified, however, weldments are put through stress relief furnaces before being passed for delivery.

Squirt welding has been so satisfactory and yields so great a saving in the experience of this company that it is now used in preference to hand welding wherever arc welds are needed and can be made in positions favorable for the semiautomatic equipment required.

**You Can do a Better Job . . .**



These aluminum parts have been given a bright copper-nickel-chromium plated finish using alkaline zincate-dip pretreatment

# Plating on Aluminum

Zincate immersion pretreatment is most practical and economical method for plating on aluminum. Recent studies show how to smooth-out production line difficulties and improve corrosion resistance of plated products

LOOKING for ways to improve plated finishes on aluminum?

Then check up on your surface conditioning treatment. By exercising a few precautions service performance can be improved.

To produce the most corrosion resistant electroplates on aluminum, using the zinc immersion pretreatment, it is necessary to obtain good coverage with the thinnest possible zinc film. This recommendation is based on tests conducted by W. G. Zelley, Aluminum Research Laboratories, details of which were given at the Montreal meeting of the Electrochemical Society.

Zinc immersion procedure is now considered the most practical and economical method for plating on aluminum. It requires less time and equipment, and is less critical to control than other methods. Good commercial plating on alumi-

num based on the zinc-dip treatment is an everyday practice.

**Broad Objective**—Research at Aluminum Co. laboratories has been aimed at casting light on the mechanism of the process in the interest of increasing the corrosion resistance of plated aluminum products.

The zinc immersion process involves the galvanic deposition of a layer of zinc on the aluminum part to be plated. This zinc film between the aluminum and the electroplate is the root of a specific corrosion problem. In many environments zinc is anodic to aluminum; consequently, it tends to protect both the aluminum and the electrodeposited zinc.

**For a Better Job**—Consideration of the mechanism of this corrosion process led to certain conclusions on the performance of plated aluminum parts. The thinnest prac-

ticable zinc film gives the best corrosion results. Aluminum alloy with the lowest solution potential result in the most resistant plated products. Lower potential difference between base metal and electrodeposited zinc makes 24S alloy better than 1100.

So far as corrosion itself is concerned, large breaks in the plated coating are less harmful than small. This is because small breaks furnish a correspondingly small anode area to protect the deposit. Result: Attack is more rapid; blistering and lifting occur earlier. For this reason bright plating baths should be operated carefully to avoid stress cracks in the plated film.

Another important point: A modification of the immersion zincate bath that tends to decrease the rate of solution of zinc by anodic reaction will be beneficial.

**Here's the Key**—One of the

that zinc has been so successfully used for immersion deposits of aluminum, as a pretreatment for zinc, is its proximity to aluminum in the electromotive series of metals. The relative order of the metals is interchangeable depending on the environment.

Potential difference between zinc and aluminum, in a given immersion bath, determines to a large extent the weight and character of the zinc deposited. Since the zinc is so important in the corrosion resistance of electroplated aluminum, this potential difference becomes a significant property.

**Getting Ready to Plate**—When properly cleaned aluminum part immersed in a sodium zincate solution, the thin oxide film on the surface is first dissolved. Just as soon as the underlying aluminum has been exposed, it also starts to dissolve and is immediately replaced by the equivalent weight of zinc.

When the aluminum surface is completely covered with a thin film of metallic zinc, action in the solution virtually stops. Most of the action takes place during the first few seconds of the immersion period, which is usually from one to two minutes in duration.

The resulting zinc coating is uniform in appearance and adherent to the aluminum surface. After rinsing the part in the dip solution from the aluminum bath, it is plated in a copper bath. Other metals may be plated over copper in the conventional

tional manner, or applied directly to the zincate treated surface if suitable precautions are taken.

Most of the zincate-dip baths in plant use today have this basic composition: 400-500 g/l of caustic soda plus 80-100 g/l zinc oxide.

**Make It Better**—Researchers at Alcoa found certain benefits result from the addition of a small amount of ferric chloride to this bath, plus some tartrate to maintain the iron in solution under the strong alkaline conditions. Tests show that this slight modification improves electroplating coverage on all aluminum alloys. The resistance to corrosion of aluminum plated with this type of film is improved for most of the alloys, exceptions being 24S and 75S. Improvement in corrosion properties is possibly a function of the percentage of the metallic zinc in the modified film.

Modified zincate-dip also helps smooth out difficulties in plating on aluminum alloys containing magnesium where the so-called double immersion treatment is sometimes used. This involves a double dip in the zinc immersion solution, the first zinc deposit being removed by nitric acid. The double immersion procedure using this modified solution has improved plating of aluminum die castings to the extent that items on which the standard techniques have failed are now successfully finished.

**Not Critical**—Usually 1 to 2 g/l

of ferric chloride crystals are added with about 10 grams of Rochelle salt per gram of ferric chloride to maintain the iron in solution. A large excess of ferric chloride is to be avoided, since too much may cause blistering of deposits.

When plating on aluminum alloys of high magnesium content it is advisable to increase the Rochelle salt content of the bath to 100 g/l. The modified solution is prepared by dissolving zinc oxide in the concentrated caustic solution in the usual manner, then adding the iron as a water solution of ferric chloride and Rochelle salt.

**Saves Solution** — Zincate-dip baths due to the high concentration of ingredients are highly viscous. In production operations this has two disadvantages: High drag-out on parts and rinsing difficulty. Such characteristics bring on problems, especially in the use of automatic equipment. Aluminum Company workers are investigating more dilute, less viscous, zincate-dip baths.

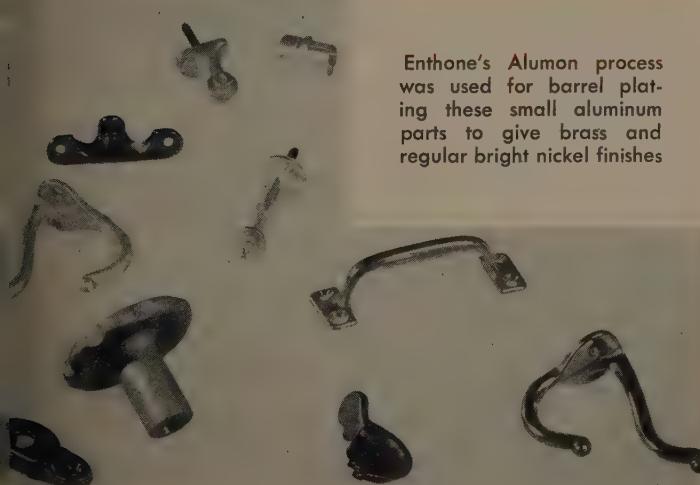
Keep in mind this fact: In any sodium zincate solution there is a minimum amount of sodium hydroxide necessary for given quantity of zinc oxide. This sodium hydroxide content, which is in excess of the amount theoretically required to react with the zinc oxide, is necessary to prevent precipitation of zinc hydroxide. The more dilute the solution the greater must be the ratio of sodium hydroxide to zinc oxide.

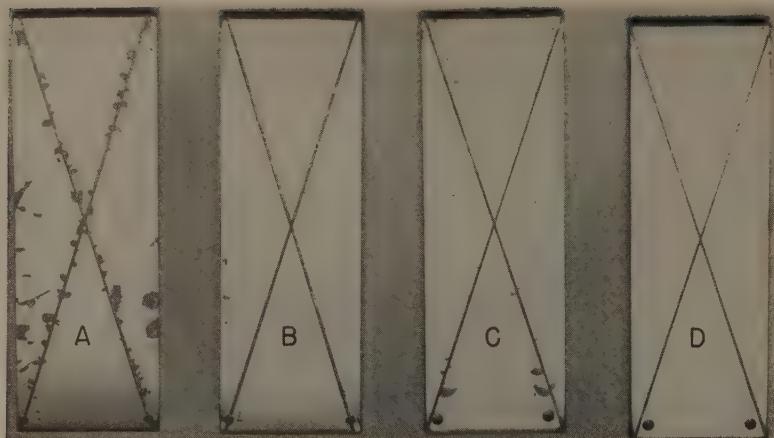
**Additions Change Potential** — More dilute baths may be used in the dip pretreatment if suitable additions are made to adjust the potential difference between zinc and the aluminum surface. This is necessary to hold down the weight of the immersion zinc deposit which tends to increase appreciably upon dilution of the dip solution.

Sodium nitrate and Rochelle salt seem to do the trick. Suitable sodium nitrate additions are of the order of 0.5 to 1.0 gram per liter, which reduce the coating weight by 30 to 50 per cent. An excess must be avoided. For example, 2 g/l of sodium nitrate may give a zinc film with a contact resistance too high for good coverage by subsequent plating.

Rochelle salt aids in conditioning magnesium and magnesium silicide

Enthone's Alumon process was used for barrel plating these small aluminum parts to give brass and regular bright nickel finishes





Modified immersion compared with regular after 300 hours salt spray test  
A regular, B modified, bright nickel; C regular, D modified Watts nickel

type alloys as well as in providing low coating weight. Likewise, dilute baths may be modified with iron addition using ferric chloride in the same manner as for the concentrated baths. This markedly improves the resistance to corrosion except on 24S and 75S alloys.

**Preferred One**—The most practical dilute type immersion bath has a basic composition of 120 g/l of caustic soda and 20 g/l of zinc oxide with the "potential regulating" additions. Another possibility is a bath with 50 g/l caustic soda and 5 g/l zinc oxide. The first bath is preferred because it provides a greater reserve of zinc. The more dilute solution results in only a relatively small increase in rinsing and drag-out properties over the 120 g/l caustic bath.

**More Care Needed**—Surface preparation should be especially thorough when employing the dilute type immersion solution. Stick to the more effective conditioning treatments; the double immersion technique gives particularly good results. Time and temperature control should be more precise. A good rule to follow when using the dilute zincate-dip is to limit the immersion to a maximum of 30 seconds at a temperature of not over 75° F.

**Already Worked Out**—Enthone's Alumon process is a proprietary dip for preparing aluminum alloys for electroplating based on a modified type of zincate solution. Aluminum parts are cleaned with alkali cleaner, acid treated, then dipped in a solution of Alumon salts at room temperature. These salts remove oxide from the surface of aluminum, activate it, and at the same time deposit a zinc-copper alloy which is adherent to the aluminum and serves as a base for electroplating.

Actual adhesive bonds formed between the electrodeposited metal and the base aluminum approach the rupture strength of the aluminum itself, when this method is used for surface preparation. The cost of plating on aluminum is not significantly different from the cost of plating on steel or copper alloys. For example, the Alumon solution costs a little more than \$1 a gallon when made up, but each gallon will treat more than 300 sq ft of surface area.

**Comes First**—To secure the best

results with the zincate-dip process for plating it is essential that surface conditioning treatment be used to give a suitable clean and uniformly active surface for deposition of zinc.

The cleaning and conditioning treatments that are necessary for aluminum have a three-fold purpose: 1. Removal of oil, grease, dirt and other contamination so that the surface will respond to etching treatments. 2. Removal of the natural oxide film, replacing it with a thinner, more uniform and suitable film. 3. Removal of certain microconstituents on the surface which may subsequently react during the plating operation.

**What to Expect**—Interest in plated finishes on high strength aluminum parts has resulted in the cumulation of considerable information on decorative chrome plated 24S-T4 alloy. Alcoa reports that this is a most favorable alloy for plating by the zincate dip method. Excellent corrosion resistance is obtained.

Alloy 24S-T4 automobile bumperettes, with 0.0015-inch nickel plate under the chromium will withstand at least 3 years exposure in an industrial atmosphere without showing any attack of the metal.

The inherent properties of 24S-T4 alloy gives good results without any special precautions in the zincate-dip bath. Plated 2S-T4 also shows no evidence of corrosion of the base metal after 3 years exposure alongside the 24S-T4 bumperettes. The 2S parts were plated using a double immersion in a modified bath.

**Die Castings Looking Up**—questionably, aluminum die castings are more difficult to plate than wrought alloys. One big factor is that greater percentages of copper, zinc, tin, and magnesium usually found in casting alloys.

The modified solution looks particularly promising for plating die castings. Casting alloys are currently under consideration for plated finishes are No. 360, 380 and 390 alloys. Alloy 380 is giving best results in plating at present. Plated finishes on this alloy should stand up in an industrial atmosphere for a period of at least one year.

### MODIFIED ZINCATE-DIP FOR PLATING ON ALUMINUM

Caustic soda .....	500 g/l
Zinc oxide .....	20 g/l
Ferric chloride .....	1 g/l
Rochelle salt .....	10 g/l

### DILUTE TYPE ZINCATE-DIP FOR PLATING ON ALUMINUM

Caustic soda .....	120 g/l
Zinc oxide .....	20 g/l
Rochelle salt .....	50 g/l
Ferric chloride .....	2 g/l
Sodium nitrate .....	1 g/l



surface of the mock-up has been thoroughly prepared, work commences on female production mold. Five layers of glass mat and glass cloth are each coated with Vibrin resin and squeegeed to remove air bubbles



Work is progressing here on the body itself. Basically the same process used for laying down the mold is repeated in body building. After proper thickness buildup, the body is cured on the mold before removal

# Plastic-Bodied Cars Hit the Roads

There won't be many outside of the sport car set for quite a while, but from small-shop techniques may come the solution to quantity production problems

ROIT'S interest in plastic, revived with the new burst sports car production soon to be off the lines, is causing more one driver to wonder if he'll be able to buy his favorite third model built of the same material. Experts predict he'll have to because the plastics pose mass production problems. Commercial production of low plastic automobile bodies is underway as a joint project of Lear Co., Costa Mesa, Calif., Naugatuck Chemical Division, Rubber Co. who are making car bodies to be mounted on standard wheelbase frames. Dented and rust-proof, the body is made from glass fibers and Vibrin plastic. While the plastic body is not

yet ready for production on a mass scale for the motoring public, it has one big advantage which is attractive to the automotive manufacturer: It can be formed and shaped without the use of extremely expensive molds and heavy plant equipment," says John P. Coe, general manager of Naugatuck.

**Starts With Mock-Up** — Initial step in the manufacture of the body is much the same as that taken by conventional manufacturers. Wood and plaster mock-up which acts as a master mold is designed and built. Use of sealer and sanding imparts the necessary smooth finish, and a coat of wax and another of polyvinyl acetate assures that the female mold will break away easily.

Fast curing coat of Vibrin plastic

is applied as an overlay to assure a finish free of pinholes and rough spots. Rest of the female mold consists of five layers of glass fiber mat and glass cloth bonded with Vibrin plastic. Layers of mat and cloth are laid up dry, and plastic is applied and squeegeed to remove air bubbles and assure even dispersion.

**Cut in Half** — While still on the plaster mock-up, steel brackets are attached to the female mold for rigidity and ease of handling, and the mold is cut in half at the driver's seat. Flanges of the same material are attached to the mold where it was cut so that it may be later accurately joined with bolts.

Mold is removed from the mock-up in two halves and each half is



Test car was deliberately driven into a tree at a speed of 25 mph to check the body strength. Inspection showed no dents, only this crack which was caused by the impact



Crack from the impact was repaired in less than an hour by first buffing it smooth and then applying a glass patch along the crack and a coating of the bonding p

spot finished to improve surface. After joining with bolts, the female mold is given the same preparation finish that the mockup received and body molding can commence.

**Building the Body**—Glass mat and glass cloth are laid up over the inside of the mold and a coat of plastic is applied and squeegeed to disperse it thoroughly through the fiber. This combination is then allowed to harden and the process is repeated until the desired thickness, approximately 2/10-inch, is obtained.

The body is allowed to cure in the female mold, portable infra-red lamps being used occasionally to speed up the process. The mold is unbolted and removed in two sections, and the body is then buffed and corners smoothed before the paint is applied.

**Strong and Light**—Currently the body is available in one design which fits a frame with a 100-inch wheelbase. As production increases, Glasspar expects to make available a variety of body styles to fit frames of various sizes. Present body weighs only 185 pounds.

It will not dent under punishment of accidents which now result in crumpled fenders and doors. Because of its resiliency, the Vibrin-glass combination springs back into

its original shape after impact. Breaks are possible under heavy impacts, but the material can be easily and cheaply repaired.

**Easily Repaired**—For demonstration purposes, the first body produced has been mounted on a custom-built sports car consisting of a special frame and supercharged engine. To test its strength, it was driven deliberately into a tree at a speed of 25 miles per hour.

The test resulted in a crack approximately 14 inches in length at the point of impact on the right side of the car near the windshield. After buffing the cracked area thoroughly, a patch of glass fiber was laid along the crack and coated with plastic. Job was completed in less than an hour.

**Promising Future**—“When you team up low cost production methods and equipment with desirable strength and wearing qualities, the plastic is a material which cannot be ignored,” believes Mr. Coe. “Equipment used by reinforced plastic molders represents an extremely small fraction of the investment cost for metal-fabricating dies and machinery.”

Integral color is a distinct possibility with the new material. At present, finished bodies are spray painted in the usual manner with

good results, but development is continuing which will build desired colors into the material.

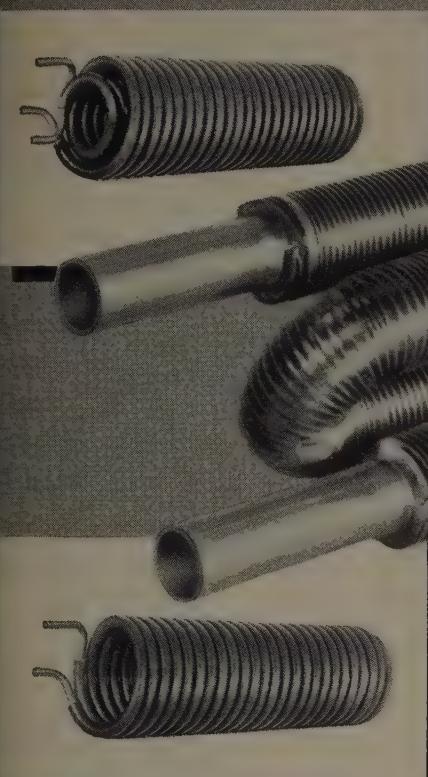
**War Baby**—The partnership glass and Vibrin plastic was formed during World War II when they were teamed up for use in aircraft radomes. The combination is strong, dimensionally stable under temperature extremes, resists weathering, and, most vital, transparent to the passage of ultra-frequency radar impulses.

Since the war the combination, which is known as reinforced plastic, has grown in popularity. Day more than 14 million pounds of polyester resin and more than 7 million pounds of glass fiber are being produced.

## Clutch Housings: 80 per Hour

Multi-operation machine is the manufacturer's standard for drilling and drilling units and a 72 six-station power indexing unit performs five operations on clutch housings at a rate of 80 parts per hour, at 100 per cent efficiency.

Built by Baker Brothers of Toledo, O., the machine has four mounted in horizontal, vertical and angular planes. Automatic operations include drilling, chamfering, counterboring, counterboring and tap-



Rome-Turney water-cooled condenser coil. Tube is  $\frac{5}{16}$ " O.D., .042" ga., bent on a  $1\frac{1}{8}$ " centerline diameter. Soldered helical fins are .135" wide, spaced 14 turns to the inch. Other types of heat exchanger coils are also shown. Rome-Turney forms coils out of tube up to 40 feet long, without joints.

For Copper Tube that can be BENT

# Rome-Turney sees REVERE

most of the Revere Metals are fabricated by usual methods conventional products. Some of them, however, bear on the market in forms that are unusual and possess special advantages. Take these helical-finned copper coils produced by the Rome-Turney Radiator Co., Inc., N. Y. It takes extra skill to produce coils with small radii. The company can produce the coils won on a commercial basis, for use in air conditioning apparatus, air compressors, and general heating and lighting applications where compactness plus high heat transfer rates are essential.

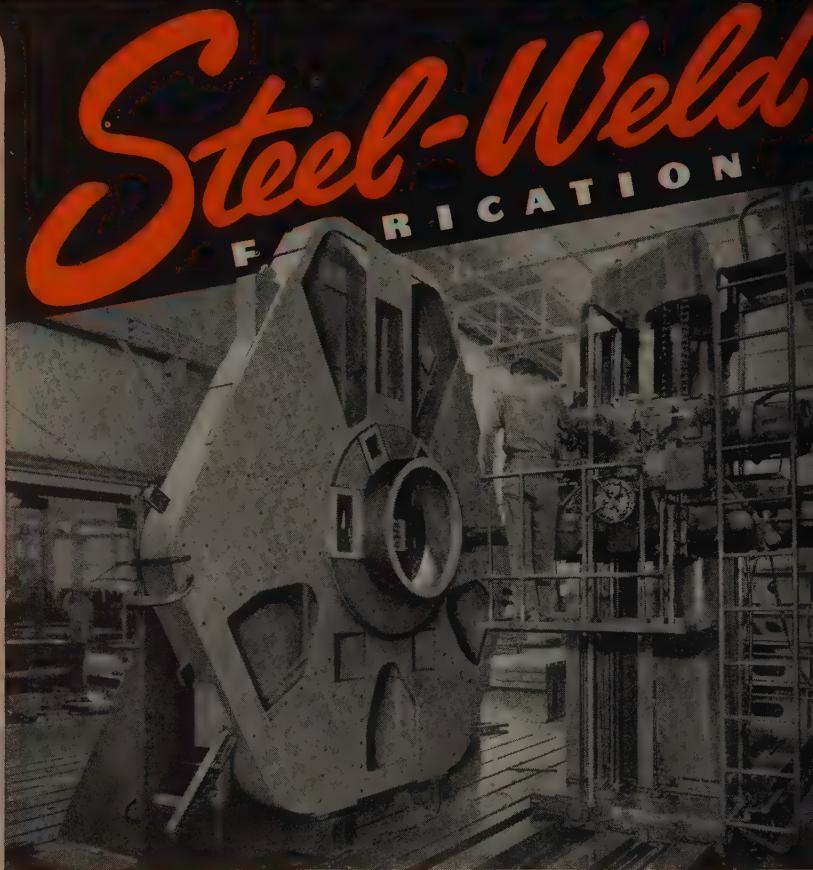
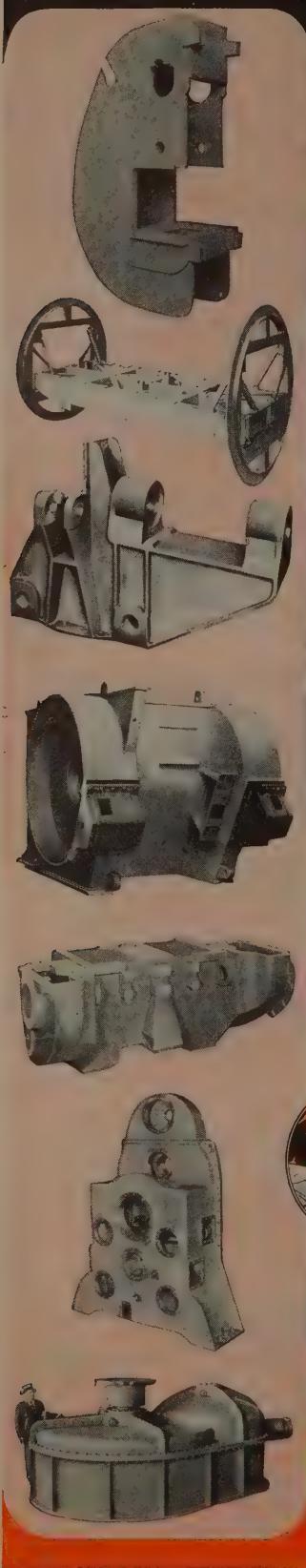
Now it is possible to make such tight turns is Rome-Turney's secret. Revere does not share in it, nor does Revere want to reveal a secret of its own, which is how to turn out copper tube in a special bending temper an application such as this. All we can say is that the methods dovetail very nicely. If you need copper that can be bent easily, and offers you as well the advantages of corrosion resistance, high heat transfer,

easy joinings, see Revere. We also make copper pipe, tube in copper alloys, aluminum alloys, and electric welded steel tube. If required, the Technical Advisory Service will gladly collaborate with you, as it has with Rome-Turney, on selection and specification matters. Get in touch with the nearest Revere Sales Office.

**REVERE**  
COPPER AND BRASS INCORPORATED

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Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—  
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Use WELDED STEEL  
for Greater Strength  
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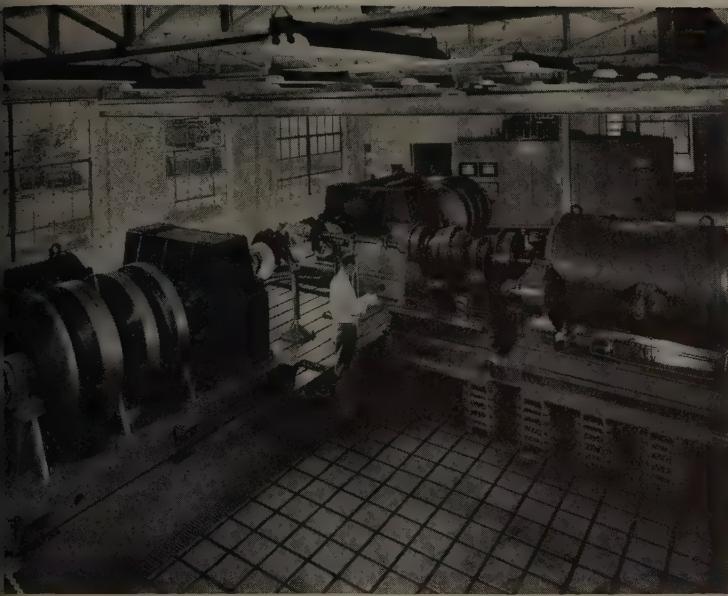
Above is another excellent example of Mahon versatility in the production of Steel-Weld Fabricated units for many industries. This base, undergoing machining operations, was produced for a TV picture tube manufacturer in the glass industry...it is typical of thousands of Steel-Weld Fabricated parts and assemblies produced and machined by the Mahon Company for manufacturers throughout the country. If parts or assemblies in your product could be redesigned and produced to better advantage through Steel-Weld Fabrication, or, if you are faced with a limited production or a product involving heavy pieces in which pattern costs are a consideration, you can turn to Mahon with complete confidence. You will find in the Mahon organization a unique source with complete, modern fabricating, machining and handling equipment to cope with any type of work regardless of size or weight...a source where skillful design and advanced fabricating technique are supplemented by craftsmanship which assures you a smoother, finer appearance job, embodying every advantage of Steel-Weld Fabrication.

THE R. C. MAHON COMPANY  
DETROIT 34, MICHIGAN

Engineers and Fabricators of Steel in Any Form for Any Purpose

# MAHON

STE



SIMULATING TRUCK ROAD CONDITIONS

... three dynamometers supply the stress and strain

## Axle Tester Provides Laboratory Proving Ground

LE-TESTING machine capable of simulating actual driving conditions experienced by a truck weighing 80,000 pounds and traveling 80 mph was installed recently at the Ken-Detroit Axle Co.'s Alden Motor Proving ground, Detroit. The equipment, engineered and built by General Electric Co., duplicates torques, stresses and loads the truck or bus drive axle will meet under both normal and unusual loads.

A 350-hp dynamometer simulates a truck engine driving an axle through transmission gears. It can deliver up to 450 hp over a drive shaft speed range of 400 to 3000 rpm. Integral blowers provided for cooling allow motoring speeds down to creep.

**Controlled Highways**—Two 550-hp output dynamometers, 650 to 1000 rpm, are attached to gears located at the axle ends and record torque output by means of strip chart recorders. Combined measurements of the three dynamometers test axle efficiency. Gears are located at axle ends and allow axle speed and load variation. For test purposes, highway conditions are controlled by magnetic tape. This tape, when run through automatic cycling equipment,

causes dynamometers to respond to impulses and exert indicated speeds and stresses. Tape recorder provides repetition of the operator's speed and torque signals used in an initial manual test.

**Permanent Record**—As each stress is imposed, instruments indicate continuously the speed, torque or load, providing a permanent record. The same test can be repeated many times until axle durability or life expectancy is established, or the recording tape can be filed and the test repeated exactly at any later date. Since its installation, the tester has been used for life tests, endurance runs and shock-loading tests, but others are under development.

Safety measures offer protection to both operating personnel and equipment. These include overload and overspeed devices, and dead-front enclosed floor-mounted cubicles for all control.

## AIME Meets 175th Time

Opening address at the American Institute of Mining and Metallurgical Engineers convention in Los Angeles Feb. 16-19 is being delivered by Gov. Dan Thornton, Colorado. This marks the begin-

ning of the 175th annual meeting of the institute.

Four days of intensive technical sessions and symposiums which cover many significant aspects of mining, metallurgy and petroleum are fitted into the program. Geochemical Methods of Exploration; Crushing and Grinding; Solid-Fuel Separation; and New Methods of Mining are among the highlights of the various technical sessions.

Extra effort was made this year to encourage student participation in the four-day meeting. They were registered free, could attend all sessions, receive technical papers and attend the opening luncheon free of charge.

## Transistor Research Aid

RADIOACTIVE methods are accelerating research of semiconductor materials, used in transistors according to Dr. George H. Morrison, Sylvania Electric Products Co., Bayonne, N. J.

Dr. Morrison reports that now it is possible to measure impurities of one part in 100 million by radioactivity methods in germanium. Conventional chemical measuring methods are ineffective at these extremely low concentrations, he says.

Electrical properties of germanium and other semiconductor materials are greatly dependent on the presence or absence of minute amounts of certain impurities. Material is first purified, then impurities are added in controlled process. In the processing, contamination by impurities in the container material must be evaluated.

**Irradiated Containers**—The containers, made of the purest available graphite, are irradiated with neutrons in the nuclear reactor at Brookhaven National Laboratories, Brookhaven, L. I., N. Y. Containers are then used in the melting of germanium. The small amounts of radioactive impurities in the container are transferred to the germanium during the melting process.

Amounts transferred can be measured by standard methods of measuring intensity and rate of decay of radioactive emission, using commercially available instruments.

# See how another

# AUTOMATIC HOLEWAY GIANT

NATCO

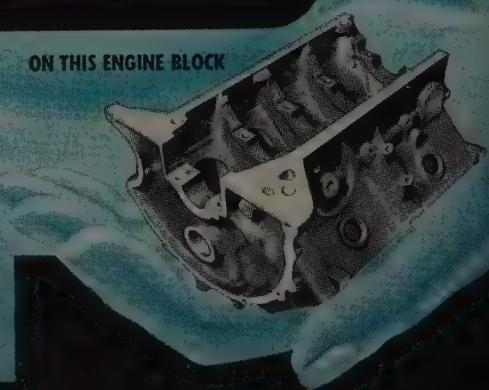
NATCO ENGINEERED  
for quality and quantity production

## Completes all 55 operations

at the rate of nearly  
**2 parts per minute**

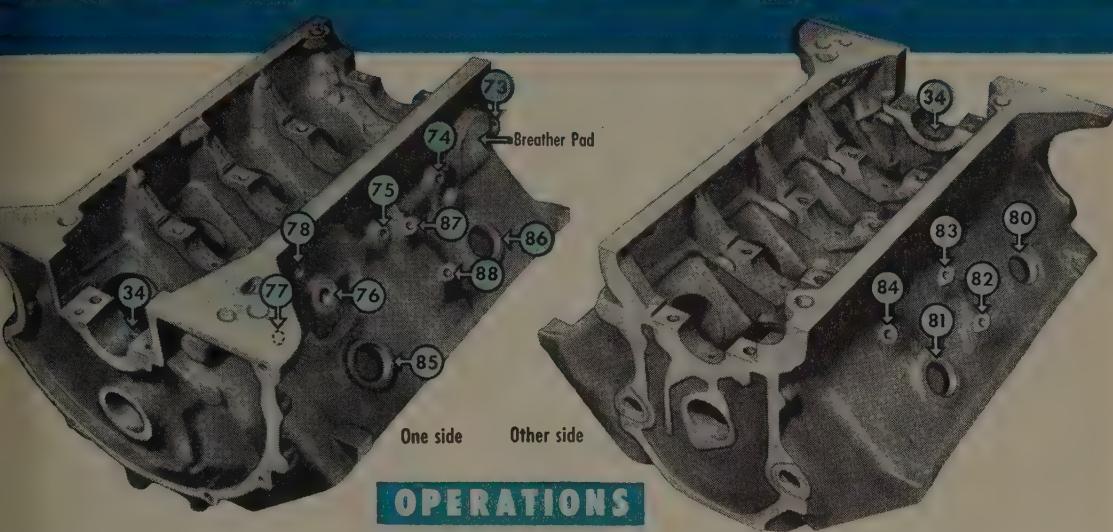
ON THIS ENGINE BLOCK

including milling, drilling, combination core drilling and chamfering, reaming, combination spot facing and chamfering, combination rough counterboring and spot facing, rotating part 180° vibrating for chip removal, and Inspecting Holes.



# PRODUCES 111 PARTS PER HOUR

## and inspects its own production



### OPERATIONS

#### STATION #1 Load 1 part

#### STATION #2

#### Right Angular Head (17° above horizontal)

Drill 1 hole #74 to 7/16" diameter part depth.  
Drill 3 holes #73, #75 and #77 to 7/16" diameter part depth.  
Drill 1 hole #76 to 31/32" diameter part depth.

#### STATION #3

#### Right Angular Head (17° above horizontal)

Drill 1 hole #74 to 7/16" diameter additional part depth.  
Drill 3 holes #73, #75 and #77 to 7/16" additional part depth.  
Drill 1 hole #76 to 7/16" diameter additional part depth.

#### STATION #4 Idle

#### STATION #5

#### Left Angular Head (45° above horizontal)

Combination core drill and chamfer 2 holes #80 and #81 1-23/32" dia. for 1.750" ream.  
Drill 2 holes #82 and #83 to 3/8" diameter for 7/16" x 14 tap.  
Drill 1 hole #84 to 7/16" dia. through for 1/4 NPSF Thread.

#### Right Angular Head (45° above horizontal)

Combination core drill and chamfer 2 holes #85 and #86 to 1-23/32" dia. for 1.750" ream.  
Drill 2 holes #87 and #88 to 3/8" diameter for 7/16" x 14 tap.

#### STATION #6

#### Left Angular Head (45° above horizontal)

Ream 2 holes #80 and #81 to 1.750" diameter.  
Combination spot face and chamfer 2 holes #82 and #83 to size.

#### Right Angular Head (45° above horizontal)

Ream 2 holes #85 and #86 to 1.750" diameter.  
Combination spot face and chamfer 2 holes #87 and #88 to size.

#### STATION #7 Idle

#### STATION #8

#### Left Angular Head (angle off vertical)

Drill 1 hole #34 to 1/4" diameter 1/2 depth.

#### Right Angular Head (17° above horizontal)

Combination rough counterbore for 4.94" finish diameter and spot face 1-15/16" dia. bolt boss #76.

#### STATION #9

#### Left Angular Head (angle off vertical)

Drill 1 hole #34 to 1/4" diameter through.

#### Right Angular Head (17° above horizontal)

Finish counterbore 1 hole #76 to 4.94" diameter.

#### STATION #10 Idle

#### STATION #11

#### Right Angular Head (17° above horizontal)

Drill 4 holes #73, #74, #75 and #77 to 11/32" diameter additional part depth.

Drill 1 hole #76 to 11/32" diameter additional part depth.

Drill 1 hole #78 to 11/16" diameter .24" deep.

#### STATION #12

#### Right Angular Head (17° above horizontal)

Drill 4 holes #73, #74, #75 and #77 to 11/32" diameter additional part depth.

Drill 1 hole #76 to 11/32" diameter additional part depth.

Drill 1 hole #78 to 9/16" diameter .46" depth.

#### STATION #13 Idle

#### STATION #14

#### Right Angular Head (17° above horizontal)

Drill 4 holes #73, #74, #75 and #77 to 11/32" diameter to depth.

Drill 1 hole #76 to 11/32" diameter to depth.

#### STATION #15

#### Right Vertical Head

Mill 4" dia. seat around hole for oil breather tube.

#### STATION #16 Idle

#### STATION #17

Rotate part 180°, vibrate while rotating from pan face up to pan face down front end leading.

#### STATION #18

#### Left Side (17° below horizontal)

Inspect holes to be tapped for drill through and depth 5 holes #73 to #77 incl. (45° below horizontal).

Inspect holes to be tapped for drill through and depth 2 holes #87 and #88.

#### Right Side (45° below horizontal)

Inspect holes to be tapped for drill through and depth 3 holes #82, #83 and #84.

#### STATION #19 Unload

Oil pan face down front end leading.



*Call a Natco Field Engineer*

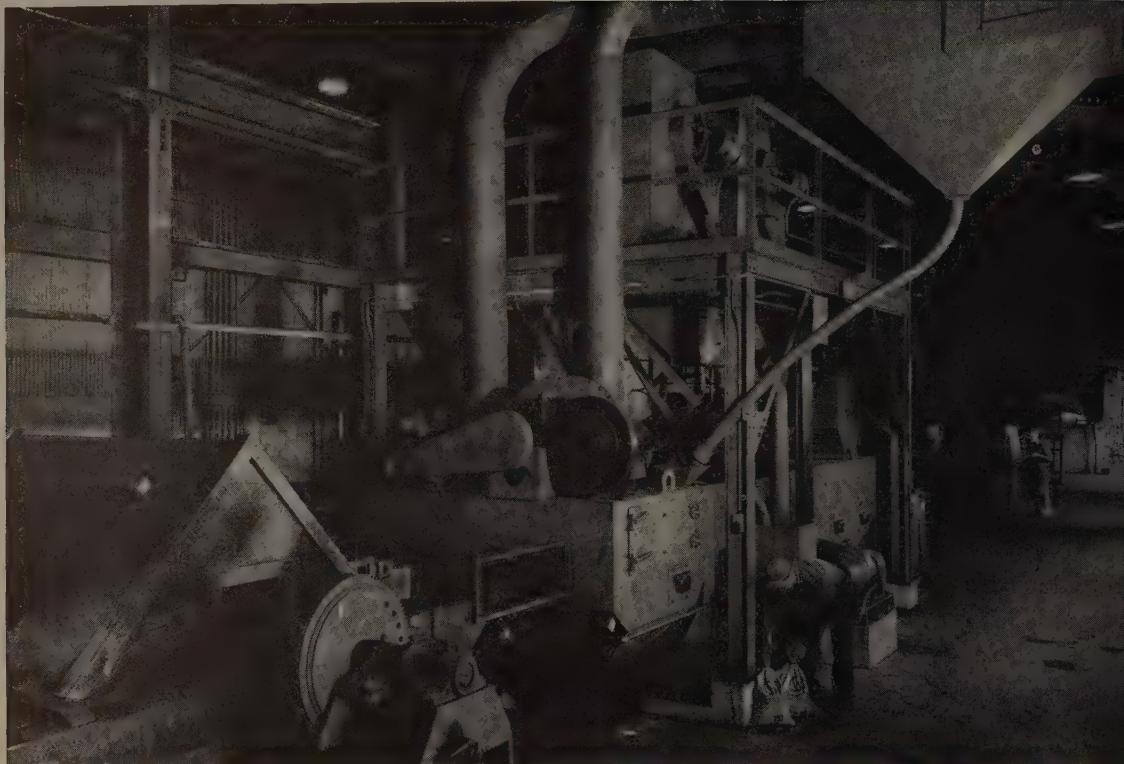
to help you solve your problems in  
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Wheelabrator cleaning cabinet in center foreground is part of the annealing and pickling line itself. Workman is preparing to add shot powder to the closed circuit, replacing the spent shot that is drawn off with scale dust

# Shot **BLASTS** 430 Cleaning Costs

**Washington Steel Corp. puts shot blast cleaner on annealing and pickling line and reports better quality strip. They're saving time and getting more uniform product, too**

FIRST COLD MILL in the country to take 36½-inch coils of type 430 straight chrome stainless steel from hot mill to cold mill without scale breaking is attracting attention of most stainless producers. They're watching closely the operation of a shot-blast cleaning unit installed in the strand annealing and pickling line at Washington Steel Corp., Washington, Pa.

Prior to March 1952, Washington bought annealed and pickled coils of 430 for cold rolling and finishing. It was then that they installed a shot-blast mechanical cleaner designed and built by American

Wheelabrator & Equipment Corp., Mishawaka, Ind. The new cleaner, according to T. S. Fitch, Washington's president, makes short work of the heavy scale with none of the rolled-in scale, coil digs, slivers, etc. so common to cold-roll methods of scale breaking.

**What It Is**—Cleaning cabinet itself is a box-like structure, 24 x 12 feet, through which the strip moves after traveling through the annealing furnace and cooling sprays. Four wheel units, each turned by a 20 hp motor mounted outside the cabinet, blast the strip with S-110 steel shot. Two of the wheels are

below the strip and two above.

Speed of the strip through annealer (about 7½ fpm for annealing) determines the blasting speed of the cleaner and the quantity of shot that is fed to the wheels by a solenoid valve whose action is automatically controlled by pushbutton feeds the shot predetermined for thorough cleaning.

**Shot Reused**—Shot is in a closed circuit; from a collection hopper in the base of the cabinet it is conveyed by elevator to two gravity-feed hoppers above which is a part of the abrasive air wa-

42

FURNACES OVER  
A MILLION TONS...

and still going strong with

**NATIONAL CARBON**  
TRADE - MARK

BLAST FURNACE LININGS

IT'S DOWNRIGHT  
DISCOURAGIN'-  
SAME OLD  
LININGS, YEAR  
AFTER YEAR.

Of these 42 "National" carbon-lined blast furnaces, **13** original linings have produced from 1 to  $1\frac{1}{2}$  million tons; **18** from  $1\frac{1}{2}$  to 2 millions; **10** have produced between 2 and  $2\frac{1}{2}$  millions; and **1** lining has topped the  $2\frac{1}{2}$  million ton mark. Every year more "National" carbon goes in . . . stays in to produce record tonnages, record low cost and *smooth* operation. More and more, it pays to watch the growth of CARBON in modern steel-making equipment.

The term "National" is a registered trade-mark  
of Union Carbide and Carbon Corporation

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Job costs ARE FIGURED ON A SQUARE FOOT BASIS  
WHILE material IS PURCHASED ON A WEIGHT BASIS

18 gauge x 36" x 120"

= 63.00 lbs. (theoretical)



Here's how  
**MicroRold Stainless Steel**  
**SAVES you money**

In the use of stainless steel, the selection of gauge number is usually determined by the minimum permissible thickness having sufficient strength to meet the requirements of the application. When you receive material on the heavy side of the gauge you are paying a premium for stainless surface area.

When sheets are ordered by gauge number, the permissible A. I. S. I. variation in thickness is plus or minus 10%. Thus, if you order 18 gauge, you may receive sheets .052" thick, when a thickness of .0475" would suit your purpose. Using a standard 18 gauge 36" x 120" sheet as an example,

the theoretical weight is 63.00 pounds, but weight could permissibly vary between 5 pounds and 65.52 pounds. Each .001" of thickness adds 1.26 pounds per sheet.

MicroRold sheets may be ordered by gauge number and you can specify they be rolled on the light side of the gauge range. This is true because the equipment is such that more accurate control of thickness is possible.

If you are not a user of MicroRold sheet it will pay you to get the full details. Your nearest warehouse distributor will gladly tell you the MicroRold story.

**Washington Steel**

**CORPORATION**

**WASHINGTON, PENNSYLVANIA**





Gravity bins and the tubes feeding two of the four impeller wheels are shown above the cleaning cabinet. Bin at top left catches any usable shot that may be in the scale dust and returns it to the main shot bin in the cabinet base

separator. It is then fed to the bins forming a continuous circulation of usable abrasive. The entire cleaning unit is connected to a cloth bag dust collector which removes all material not taken out by the separator.

**Good for 300 Series**—While almost 70 per cent of Washington's output is now 430 on which shot blasting works so well, considerable improvement in quality and production of 300 series strip is reported. With the higher annealing speeds possible, the Wheelabrator equipped line could produce an

estimated 175-200 tons per day instead of the 135-150 tons previously possible.

Weight loss in the shot blasting is confined almost 100 per cent to the scale itself, the loss of metal being so small as to be insignificant. In the 430 steel, scale accounts for almost 1½ per cent of the strip while in others it is less than 1 per cent.

**Process Flows**—The entire process begins with the placing of a hot-rolled coil on the uncoiler and welding the end to the trailing end of the preceding coil. Strip feeds through a leveller and then into the annealing furnace. Here the speed of the entire line is set, depending on the thickness and analysis of the steel. Next point is the water spray cooler and then into the shot-blast cleaner whose speed has also been attuned to annealing speed.

From the cleaning unit, the strip passes through mild pickling acid (5 nitric, 2 hydrofluoric) mainly to remove small scale and dust particles from the surface. High pressure water spray rinses both top and bottom surfaces, hot air then dries them, and the strip is coiled. Coils are conveyed to the edge slitters and then to the preparation line where they are in-



Without usual cold-roll scale removal, coil of 430 stainless at left becomes clean strip shown at the right, ready for the Sendzimir rolling

spected and wound on spools of the cold mill.

**Sendzimir Cold Rolling**—A 400 fpm Sendzimir mill, capable of rolling strip down to 0.0125-inch gage without intermediate annealing or pickling, performs the precision cold rolling operation. After rolling, coils are put on the final annealing and pickling line.

This line, located next to the initial cleaning and annealing line, consists of annealing furnace, electrolytic pickling bath (7 per cent nitric acid), another acid bath (7 nitric, 3 hydrofluoric), a high pressure spray rinse, hot air dryer and coiler. Coils are then taken to the skin mill where a smooth finish is imparted to the strip surface.

**Easy on Maintenance**—Operation and maintenance of cleaning unit, according to Washington, is easy and infrequent. The four wheels, each 19.5 in diameter and 2.5 inches wide, have replaceable heat treated alloy blades similar to those in turbines. Blade life in excess of 2000 operating hours, is not uncommon.

Cabinet maintenance is no great problem either. Rolls supporting the strip as it passes through are rubber covered and thus resist abrasion. Walls are lined with mild steel scrap plate which can be easily replaced when worn.

**Better Job, Quicker**—According to Mr. Fitch the blast cleaning unit at Washington, in operation almost a year, is faster, more efficient and does a better job quality-wise. It is seldom necessary to re-run a coil of strip before cold rolling.

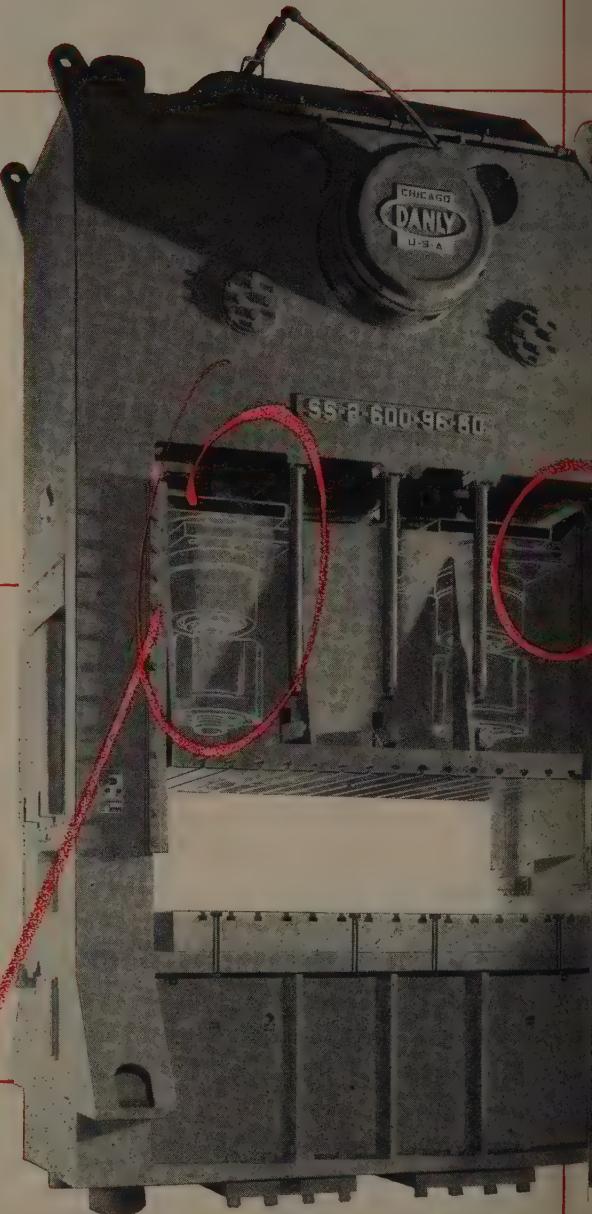
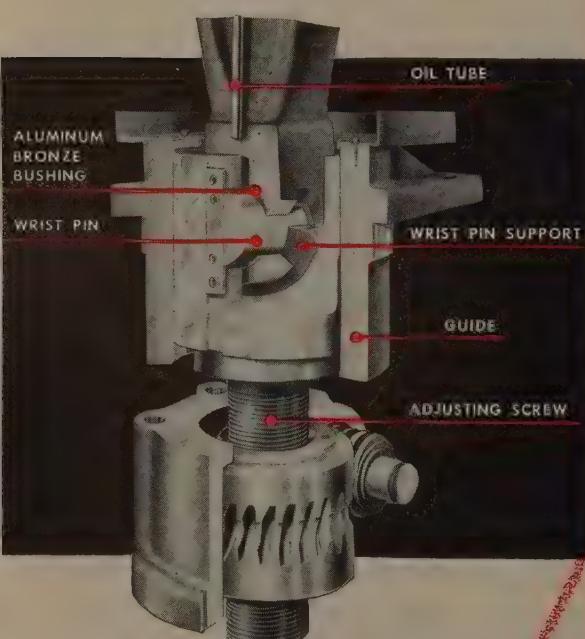
Though blast cleaning units could operate on much faster lines which take only preannealed strip, Washington believes that the advantages to be gained by annealing in the same line outweigh the disadvantage of considerably slower speed. Extra handling and storage of the annealed coils is eliminated.

## Purchasing Agents Show Grows

Purchasing Agents Association of Chicago is conducting its annual products show at Hotel Sherman, Chicago, Feb. 17-19. About 191 exhibit spaces are provided this year, compared with 150 last year and the show is expected to better the attendance of approximately 26,000 people in 1952.

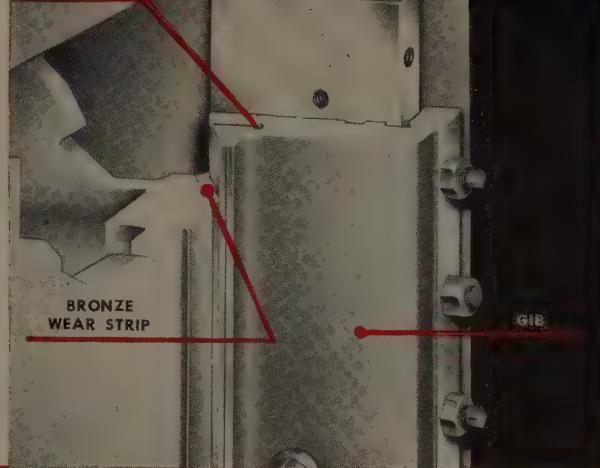
# *when you buy press*

**Slide Adjustment Mechanism** illustrates how Danly design gives intermediate support to heat treated and ground wrist pin, eliminating bending stress under load. Upper assembly is retained within vertical guides permitting the use of extra long adjustments because there is full strength at extended settings. The construction shown, plus automatic oil lubrication, makes practicable the use of close machine fits at the wrist pin joint. This is Danly construction.



A Danly 600 ton Single Action,  
Straight Side Press equipped with automatic  
oil lubrication—including gibs.

ny of Gib Construction shows  
is supplied to gibs. Automatic  
location of the gib, permitting  
ly close alignment of the slide,  
ard on most models and available  
n all Danly presses. Extra long  
irely contain slide during work-  
ake, prolonging die life. This is  
onstruction.



## Take a close look at construction

Extra strength and precision will save you both production time and money. Dies will last longer, stamped parts will meet closer tolerance requirements and press down time will be reduced.

Construction features like those shown here—plus specially engineered controls and the exclusive Danly Cool-Running Clutch—are reasons why industrial leaders throughout the country are choosing . . .

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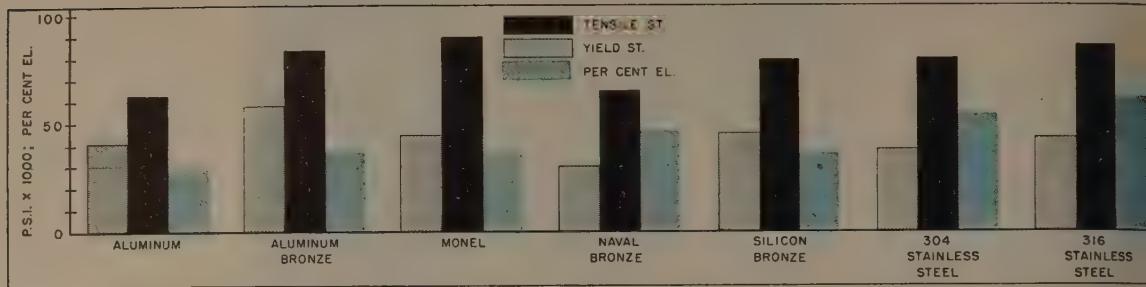


Chart compares physical properties of the all alpha bearing aluminum bronze with other fastener alloys in use

## New Bolting Material... Good For the Tough Spots

**Aluminum bronze of the iron-bearing single-phase type is making a good showing as a new bolting material. It resists corrosion in salt water, alkalies, acids**

ALUMINUM BRONZE, properly processed, and of the iron bearing single-phase type shows attractive characteristics as a new bolting material.

Need for a better fastener material is always present, whether for salt water, acids or alkaline corrosion applications. Analysis of failures indicate that no one single property can be considered sufficient for a specific application. For example, if the application is for acid conditions, corrosion resistance is but one requirement. Too often strength and toughness, equally important, are overlooked.

**Toughness With Strength**—For applications involving tensile strength alone, a single-phase or duplex alloy can be used. When

By J. F. KLEMENT

Technical Director  
Ampco Metal Inc.  
Milwaukee

the application requires toughness together with strength, single-phase materials are by far the best. Reason: The all-alpha materials in the copper base alloys possess the toughest characteristics when processed properly.

To obtain maximum toughness, a material should have a good yield strength, a high tensile strength and favorable impact characteristics, as well as better than average elongation.

**Good Corrosion Resistance**—The all-alpha iron bearing aluminum bronze alloy, containing approxi-

mately 7 per cent aluminum, 12 per cent iron and the balance copper, shows excellent resistance to salt or sea water, some acids and alkalies. No alloy is corrosion resistant to all liquids; consequently, it is always good practice to conduct corrosion tests with test dips or racks to determine corrosion rate. Such tests show that all-alpha aluminum bronze has a definite place in application involving salt water, alkalines and acids.

Aluminum bronze, when all-alpha in microstructure, is not generally susceptible to selective attack or dealuminization. The single-phase materials also are less susceptible to intergranular corrosion and stress cracking if properly processed.



A 180-degree cold bend on a thread section is necessary for a tough bolting where impact resistance is required.

ORTMAN-MILLER SAYS . . .

# WARPAGE AND BENDING ELIMINATED

MACHINING SPEED INCREASED 20%

WITH GROUND AND POLISHED

**STRESSPROOF®**  
SEVERELY COLD-WORKED, FURNACE-TREATED  
STEEL BARS



This piston rod, made by  
Ortman-Miller Machine Co.,  
Hammond, Ind., for their  
hydraulic cylinders, is ma-  
chined from Ground and  
Polished STRESSPROOF.

When this piston rod was made from C1018, Ortman-Miller had trouble with warpage after machining, and with bending and wear in operation. By switching to Ground and Polished STRESSPROOF, warpage was eliminated and machining speed increased 20%. In addition, STRESSPROOF had the strength to prevent bending, and wear became no problem.

STRESSPROOF has improved quality and lowered costs in hundreds of similar applications because of its unique combination of four qualities in-the-bar: (1) *High Strength*, double that of ordinary cold-finished shafting; (2) *Machinability*, fully 50% better than heat-treated alloys of the same strength; (3) *Wearability*, without case hardening; and (4) *Minimum Warpage*. STRESSPROOF is available in cold-drawn or ground and polished finish.

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"New Economies in the Use  
of Steel Bars"



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Please send me your STRESSPROOF Bulletin.

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**La Salle** STEEL CO.

Manufacturers of the Most Complete  
Line of Carbon and Alloy Cold-Finished  
and Ground and Polished Steel Bars in America.



## Cool water De-blisters hot steel courtesy of tough REPUBLIC WATER HOSE

As red-hot tongues of steel flicker through this 18-inch bar mill, they're met with continuous dousings by Shenango River water.

The water keeps the mill spindles cool and splashes the bar stock with a spine-tingling hiss.

It's a planned shock treatment . . . a procedure used at Sharon Steel Corporation's Roemer Works to remove scaly blisters from the rough metal. And, naturally, it's a job for hose!

Just as natural is the fact that Republic Rubber Water Hose is selected for this work where searing temperatures flash by within inches of the hose.

Republic Rubber Hose stands up . . . gives long, trouble-free service under special conditions like these and on any other industrial application where quality is the key to performance.

Get the facts today! Republic Rubber Hose, like all Republic Industrial Rubber Products, is built to your requirements and it's applied to the job by experts.

So save yourself time and money . . . make Republic your headquarters for all your Industrial Rubber Products.

*Your local Republic Distributor can help you lick any problem regarding selection, application and maintenance of Industrial Rubber Products. Write today for the name of your local Republic Distributor who will keep you posted on new developments of interest to your business.*



# REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS



## Cleaning: 1½ Cents a Unit

Two blast-cleaners alternate turn out 4000 automotive brake drums per shift

BUDD CO. turns out 4000 cast iron automotive brake drums per shift at its Red Lion foundry and cleans them at a cost for labor and abrasives of less than 1½ cents per drum.

As castings leave the shakeout machines, a 90-minute cooling period is allotted before they reach the cleaning area by way of an 80-foot monorail conveyor that passes outside the building. Cleaning them is performed on a Pangborn 9-foot diameter, six-spindle Roemer blast table machine.

Two cleaning machines are stalled, one on either side of the monorail. Generally, only one



CONTINUOUS CLEANING LOAD  
... two passes for each casting

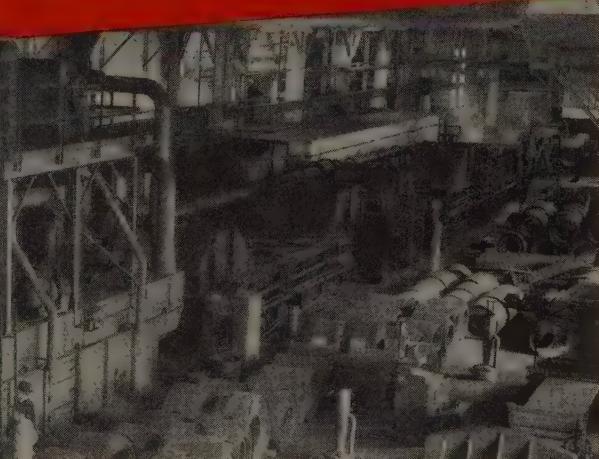
is in operation at a time. The second machine is used as standby equipment and takes care of peak loads that may be caused by stoppages along the line. Regular practice calls for using each cleaner 4 hours per shift. Cleaning speed is adjusted to the pace of the monorail conveyor.

**Two Passes**—Castings are taken off conveyor spindles as they approach the cleaning operators, then passed through the machine under abrasive stream. Cleaned on one side, they are turned over and passed through a second time.

# \* COSTS SLASHED

by a WHEELABRATOR®  
at ALLEGHENY LUDLUM STEEL CORP.

## in the DESCALING of STEEL STRIP



LABOR

5  
~~24 men~~  
6,000  
~~10,000 ft.~~

FLOOR SPACE

under 1%  
~~2%~~

VIRGIN METAL LOSS

~~1~~ NONE

SCALE BREAKING

The cost of descaling hot-rolled stainless steel strip has been drastically cut at the West Leechburg plant of Allegheny Ludlum Steel Corp. Chief cost saver is the elimination of scale breaking on straight chrome grades.

In addition, five men can now operate the Wheelabrator descaling line compared to 24 men for the batch pickling operation which it replaced. It requires only about 6,000 sq. ft. of floor space against 10,500 sq. ft. for pickling. The loss of virgin metal has been eliminated and the scale removed is in an easily recoverable condition. Weight loss varies according to grade but the average is well under 1%. This compares with a

metal loss of 2% in pickling. A large reduction has been made in the amount of acid used which has helped their acid disposal problem.

The Wheelabrator is cleaning stainless steel strip in widths ranging from 9" to 37½" at speeds from 35' to 75' per minute. However, it may be applied to the cleaning of low carbon steels with equal success at any desired speed.

*Savings that result from mechanical descaling of steel strip are described in bulletin 894. Send for your copy today.*



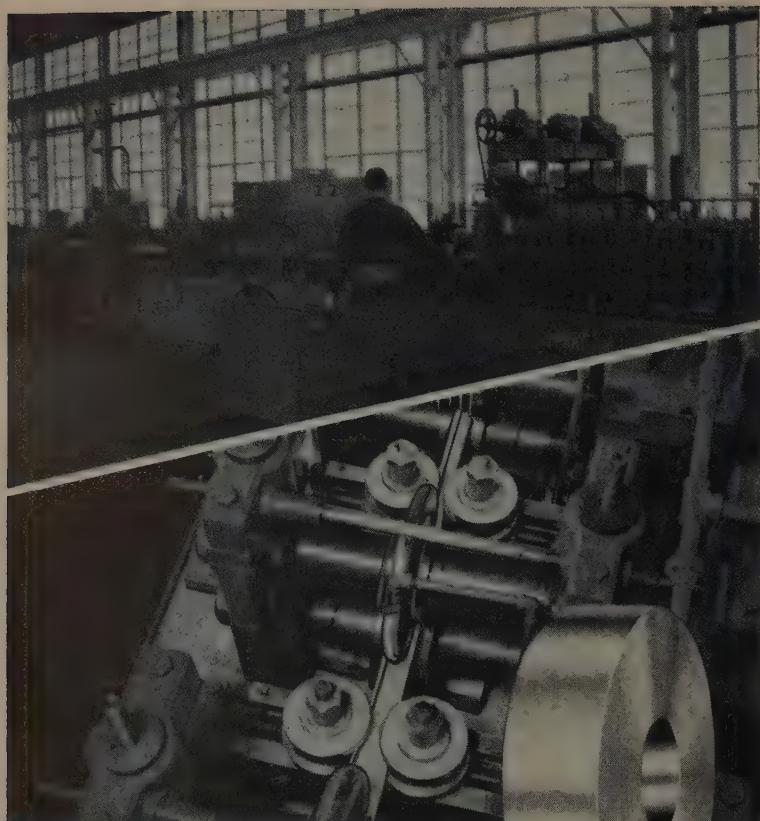
**WHEELABRATOR** — The perfected airless centrifugal blast unit pioneered by American slashes cost and cleaning time. Conserves power, labor, space. Cleaning perfection results in longer tool life, faster machining and grinding, easier inspection.



# American

WHEELABRATOR & EQUIPMENT CORP.  
309 S. Bixby St., Mishawaka, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT



### Wrought Iron Distribution

To protect against corrosion high-range steam pressure, Westhouse Sturtevant Division reports has standardized on 1-inch wrought iron pipe for heater coil and 1 1/2-inch for steam distributing system. The pipe, supplied by A. M. Byers of Pittsburgh, is assembled here for space heating and processing.



Newly built and newly equipped, Wallingford's tubing mill is as modern as today. This equipment, operated by men of experience, using Wallingford strip steel of consistently high quality, produces tubing that in analysis, tolerance and finish can be counted on to be uniform at all times. This complete dependability provides savings in fabrication. Less down time, fewer rejects, and a finished product of constant quality is assured with Wallingford uniform tubing.

## THE WALLINGFORD STEEL CO.

SINCE 1922



WALLINGFORD, CONNECTICUT, U.S.A.

LOW CARBON • HIGH CARBON  
ALLOY • STAINLESS • STRIP and TUBING

take care of the reverse face. After cleaning, castings are put on a roller conveyor and moved by gravity to another station where excess metal is ground or chipped pneumatically. Castings are also inspected in this section before they go to the shipping department.

The foundry, located in northeast Philadelphia, is producing 4000 drums per shift with one production line. The plant's 60,000 sq ft of floor space is arranged so a second molding line can be ranged when warranted.

**Cost Analysis**—The firm has given careful attention to the cost structure for more than a year just to get a cleaning cost figure of less than 1 1/2 cents per drum. Pangborn Malleabrasive is used at an average 18-2/3 cents cost per pound of metal at the spot, or about 0.9-cent per drum, cleaned. Direct labor amounts to about 1 cent per drum.

Drums are finished to customer specifications. One part of the foundry output is shipped to Detroit automotive plants and is not machined. But the other part of the output is machined at Budd and shipped to eastern automotive assembly plants.

# THE AMERICAN STORY

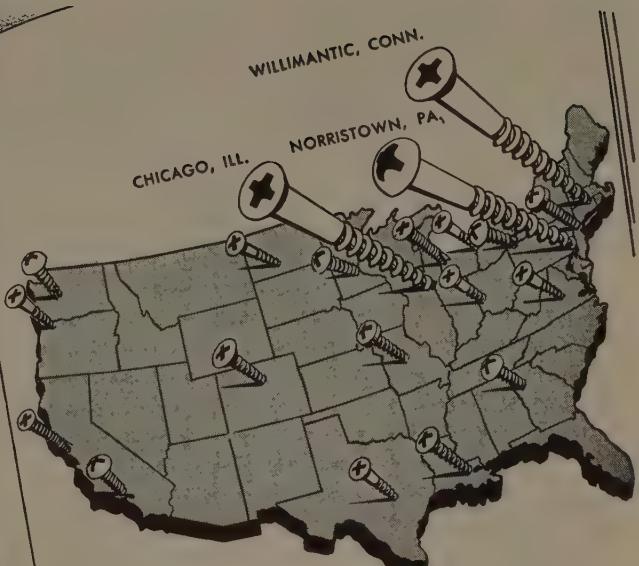
CHAPTER 6:

**"LOGISTICS"**  
(or How to Supply You  
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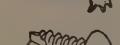
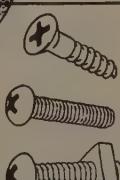
Two high-production plants and a conveniently located mid-continent warehouse . . . plus direct factory representatives and top distributors in key cities from coast to coast . . . this is the supply service set-up for American Phillips Screws. So every user can be sure that he can get his requirements promptly . . . with every shipment quality-controlled to *American's stubborn standards*. If you want to cut your fastening costs, let American show you how *American Phillips Screws always cost less* in the long run. Write:



**AMERICAN SCREW COMPANY**

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WILLIMANTIC, CONNECTICUT

Main Office & Plant  
Willimantic, Conn.  
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Office & Warehouse, Chicago, Ill.



## Ultra-Thin Strip Grows

Demand for precision strip  
introducing more cluster mills  
with small work rolls

THE GROWING miniaturization program is causing an unprecedented demand for precision-rolled ultra thin gage strip metals, according to A. I. Nussbaum, American Silver Co. Inc., Flushing, N.Y. Industry is supplying closer-tolerance commercial-tolerance strip and to the aircraft, instrument, electronic manufacturers.

Much of the success achieved in this field has been due to the introduction of both 4-high and cluster cold rolling mills with extremely small diameter work rolls. Sendzimir cluster mills with 0.468 and 0.250-inch diameter work rolls have produced 0.0004 and 0.00015-inch thick iron-nickel alloy foils respectively.

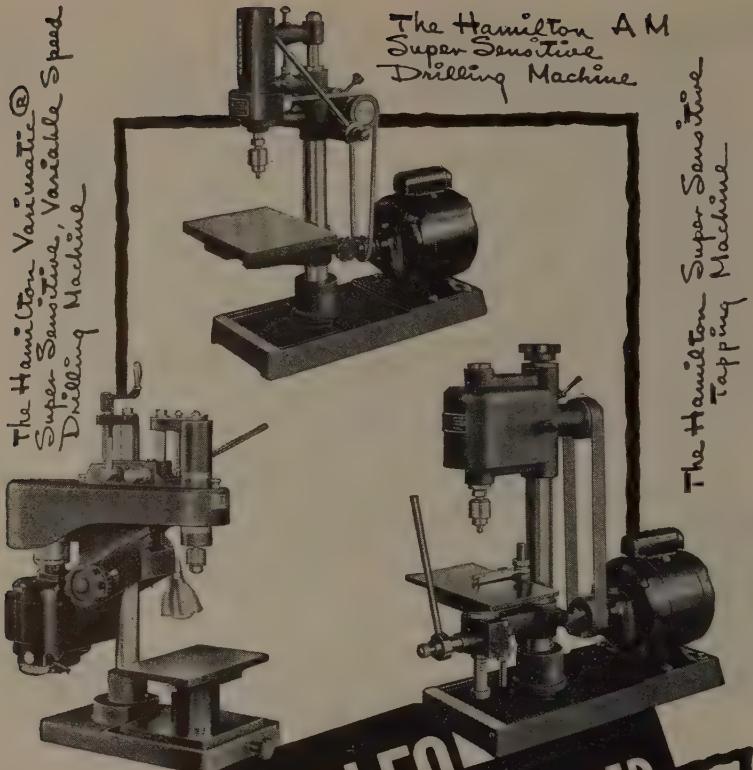
**More to Come**—Even thinner gage metal will result from a mill having 0.100-inch diameter work rolls, which is now being designed. The elimination of batch annealing procedures in favor of continuous strand annealing performed in a controlled-atmosphere muffle furnace has contributed greatly to the production of a high quality uniform strip.

While the bulk of production in this field involves carbon steels, stainless steels, copper-base, nickel-base and iron-nickel alloys, special development work undertaken during the last year included the reduction to foil gages of the rarer metals, such as tantalum, titanium, molybdenum, tungsten, vanadium and zirconium. It has been found possible, for example, to roll tantalum from 0.010 to 0.0005-inch gage — 95 percent total reduction—without an intermediate anneal on Sendzimir mills.

**Stainless Too**—Another field in which the unusually high total reductions facilitated by cluster mills are of great value, is the production of fully work-hardened type 304 (17-7) stainless steel having a tensile strength in excess of 200,000 psi.

Phosphor bronze and 2 percent beryllium copper foil rolled to ultra-close tolerances is finding increasing application in the fabrica-

The Hamilton VARIMATIC®  
Super Sensitive Variable Speed  
Drilling Machine



DRILLED HOLES TAPPED

## Hamilton DRILLS AND TAPPERS MAKE TIME, SAVE COSTS ON ACCURATE SMALL HOLE PRODUCTION

Small holes . . . tiny holes . . . in materials of such diverse characteristics as fiber and monel, ceramic and bronze, are being drilled and

threaded speedily, accurately, profitably . . . NOW . . . by thousands of Hamilton Drills and Tappers.

*The Hamilton VARIMATIC® DRILL,*

*The Hamilton A-M DRILL,*

*The Hamilton TAPPER,*

each a bench type, super-sensitive machine with ample clearances and travel, incorporate such precision that work is always held well within the tolerance allowed, and such stamina that they maintain their

accuracy year after year even under heavy production loads. Our free Bulletin No. V-472 provides full information including specifications. Write now! Tomorrow you may need the information.





## ***in WIRE ROPE, too, survival calls for the RIGHT KIND of muscle***

Powerful, constrictive muscles give the python the crushing strength that enables him to exist under the grim rules of jungle law—where only the fittest survive.

Same way with wire rope. Here again, ability to last under adverse conditions demands the right kind of muscle. Bending Fatigue... Shock Stress... Abrasion... Load Strain—each demands wire rope that best combines the required resistance factors to overcome the destruc-

tive forces encountered in different types of service.

Complete quality control from ore to finished rope; long experience and specialized know-how—these are your assurance that in Wickwire Rope you always get the right construction...the right grade of steel and size of wire for long-lasting reliable service on your particular job.

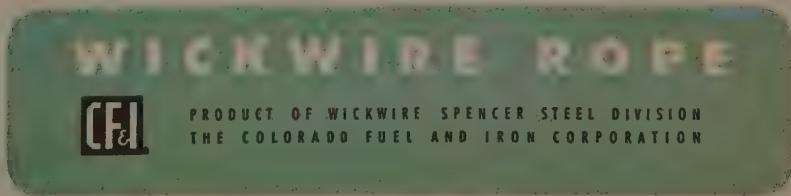
See your Wickwire Rope distributor or contact our nearest sales office.

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa

THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane  
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia



A YELLOW TRIANGLE  
ON THE REEL IDENTIFIES  
WICKWIRE ROPE



# TRAMRAIL CRANES SPEED PRODUCTION ... and AID SAFETY



WHEN adequate overhead crane equipment is provided there is no waiting for materials, no loss of time of either skilled men or costly machine-tools, for want of a lift. That means improved efficiency and greater production.

Workers are usually enthused when Cleveland Tramrail Cranes are installed, for it lightens their load. Instead of hard, often back-breaking lifts, their work is reduced to the mere pushing of buttons. Electric hoists and easy rolling carriers do

the heavy lifting and hauling.

Safety, too, is given a tremendous boost. Hernias, mashed fingers and toes and more serious accidents are greatly reduced or eliminated entirely.

There is little other industrial machinery that returns as large dividends and raises employees' good will as much for the amount invested as Cleveland Tramrail. It will pay you to learn why thousands of leading companies have installed this modern cost-reducing equipment.

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#### Ring a Crankshaft

rysler Corp. engineers are not con-  
ting a music class when they strike  
giant tuning fork. They are test-  
strength and endurance of crank-  
shfts. Vibrations from the fork bend  
crankshaft as many as 5000 times  
minute, and each bending cycle is  
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ft in heaviest service in a car

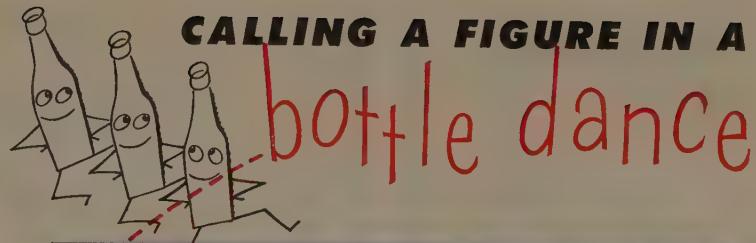
of diaphragms, contacts and  
ings. Another beryllium alloy,  
per cent beryllium aluminum, is  
being used experimentally in  
p components where its high-  
strength, low-density character-  
ics are of major value.

One of the most interesting de-  
lopments in the use of ultra-thin  
material in the last year has  
in the manufacture of high-  
meability tape-wound magnetic  
es, which are already in use in  
h military and civilian elec-  
nic equipment. The tapes in-  
ved are made of grain-oriented  
con steel and iron-nickel alloys  
t range in thickness from 0.005  
0.0025-inch.

#### Quality Sulphide Lode Proved

Prospect of commercial exploita-  
is improved by flotation tests  
iron sulphide ores from deposits  
Aitkin and Carlton counties in  
mesota, reports U. S. Bureau of  
es. Average sulphur recovery  
7 per cent.

relatively low silica content of  
concentrate also indicates a



## LEBANON Castings ARE AT WORK

EVERYONE is fascinated by the sound and action of modern  
bottling machinery at work. It's the cams that "call the figures  
in this bottle dance"! And these cams have to be tough.

In Crown Cork & Seal Company's CEM 40 bottling machine, illus-  
trated above, the sturdy cam is a Lebanon CIRCLE L special alloy  
steel casting. The efficiency of this machine that fills and caps many  
millions of soft drink bottles a  
year, is due in part, to the special  
wear and endurance properties  
built into the Lebanon Alloy Steel  
employed in casting the cam. The  
cam illustrated must hold its form  
and size, must keep wear to a  
minimum thereby eliminating  
expensive machine down-time.

Wherever castings are required,  
it's sound practice to use only the  
highest quality. Those bearing the  
CIRCLE L trade mark are high  
quality products of true Lebanon  
craftsmanship.



#### You should see... STEEL WITH A THOUSAND QUALITIES

This 37 min., 16 mm.  
full color sound film  
showing the making of  
steel castings from blue-  
print to end use should  
be shown to your staff.  
For information write:  
Dept. B, Lebanon Steel  
Foundry, Lebanon, Pa.

## LEBANON Castings

CARBON, SPECIAL ALLOY  
AND STAINLESS STEEL

LEBANON STEEL FOUNDRY



LEBANON, PA.

high-grade iron oxide sinter suitable for blast furnace use can be produced after recovery of the sulphur from the concentrates. The Minnesota deposits are located conveniently near communication and transportation lines and an already-established iron mining company.

One good possibility for use of the deposits might be for development of a Minnesota manganese industry from Cuyuna Range manganeseiferous ores, according to Paul T. Allsman, director of the bureau's

regional office in Minneapolis. Using sulphur dioxide gas, the bureau is already conducting pilot-plant tests in recovering manganese from Cuyuna slate ore in a sulphatizing furnace.

If use of sulphur dioxide gas in the process under investigation is as successful as tests indicate, Mr. Allsman states there is a definite tie-in between manganese-bearing ores and nearby iron sulphide deposits. Iron sulphide could be burned to get sulphur dioxide gas.

## CALENDAR OF MEETINGS

February 16-19, American Institute of Mining & Metallurgical Engineers: Annual meeting, Hotel Statler, Los Angeles. Institute address: 29 W. 39th St., New York. Secretary: E. H. Robie.

February 16-19, Industrial Ventilation Conference: Michigan State College, E. Lansing, Mich. Co-sponsor: Division of Industrial Health, Michigan Dept. of Health. Information: K. E. Robinson, Division of Industrial Health, Lansing 4.

February 18-20, Society of the Plastics Industry Inc.: Annual reinforced plastics conference, Shoreham hotel, Washington. Society address: 67 W. 44th St., New York. Executive vice president: William T. Conrad.

March 2-6, American Society for Testing Materials: Spring meeting, Hotel Statler, Detroit. Society address: 1916 Race St., Philadelphia. Secretary: Robert J. Painter.

March 2-6, Pittsburgh Section, American Chemical Society and Spectroscopy Society: Pittsburgh conference on analytical chemistry and applied spectroscopy. Hotel William Penn, Pittsburgh. Information: L. E. Pitzer, U. S. Steel Co., 525 Penn Place, Pittsburgh 30.

March 3, Open Steel Flooring Institute: Annual meeting, Hotel Drake, Chicago. Institute address: 1506 First National Bldg., Pittsburgh 6. Secretary: Stuart Swensson.

March 3-5, Society of Automotive Engineers: National passenger car, body and materials meeting, Hotel Sheraton-Cadillac, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 4, Steel Kitchen Cabinet Manufacturers Association: Quarterly meeting, Hotel Cleveland, Cleveland. Association address: Engineers Bldg., Cleveland 14. Secretary: A. J. Tuscany.

March 6, Bituminous Coal Research Institute: Annual meeting, Netherland Plaza hotel, Cincinnati. Institute address: 2809 First National Bank Bldg., Pittsburgh 22. Secretary: C. A. Reed.

March 8-11, American Institute of Chemical Engineers: Annual spring meeting, Hotel Buena Vista, Biloxi, Miss. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

March 11, Foundry Education Foundation: Annual meeting and technical, university industry advisory committee conference, Hotel Cleveland, Cleveland. Foundation address: Terminal Tower, Cleveland 13. Executive director: George K. Dreher.

March 11-12, Society of the Plastics Industry: Annual Canadian conference, Hotel Brock, Niagara Falls, Canada. Society address: 67 W. 44th St., New York 6. Executive vice president: William Conrad.

March 15-19, American Chemical Society: Spring meeting, Hotels Statler and Biltmore, Los Angeles. Society address: 1155 16th St., NW, Washington 6. Assistant secretary: R. M. Warren.

March 16-18, National Association of Material Dealers: Annual meeting, Conrad Hilton, Chicago. Association address: 271 Madison Ave., New York 17. Secretary: Clinton M. White.

March 16-20, National Association of Precision Engineers: Annual conference, Sherman, Chicago. Association address: Milam Bldg., Houston 2. Secretary: Campbell.

March 16-20, National Association of Manufacturers: Institute on Industrial Relations, Hollywood Beach hotel, Hollywood Beach, Fla. Association address: 14 W. 44th St., New York 20. Director, employment division: Sybil S. Patterson.

March 18-20, American Society of Tool Engineers: Annual meeting, Hotel Statler, Detroit. Society address: 10700 Puritan, Detroit 21. Executive secretary: Harold Conrad.

### ROLLS

MACHINE SCREWS  
SHEET METAL SCREWS  
DRIVE SCREWS  
AND SPECIALS  
AND KNULED PARTS



### HARTFORD SPECIAL

## AUTOMATIC THREAD ROLLERS

Hartford Special Automatic Thread Rollers feature completely automatic hopper feed, vibration free operation and quick and easy setups. Model A-312-H above rolls screws from No. 6 (.138) thru  $\frac{3}{16}$ " diameter with thread lengths up to 2 $\frac{1}{2}$ '. Smaller model A-190-H rolls screws from No. 2 (.086) thru No. 10 (.190) with thread lengths up to 1 $\frac{1}{2}$ '.

For complete information send for Bulletin TR.



When it comes to production — come to

**HARTFORD**

*Special*

...the best buy in the long run



THE HARTFORD SPECIAL MACHINERY CO., HARTFORD 12, CONN.

**STAINLESS  
STEEL**

**DISHED ONLY**



**FLANGED ONLY**



**DISHED & FLANGED**



# **HEADS**

**for  
TANKS AND  
BOILERS**

... delivered  
ready to use.  
Heads machined  
as required.  
Firm delivery  
dates.



**Prices on request.**

**McCABE MFG. CO.**

**9 WATER STREET, LAWRENCE, MASS.  
724 FIFTH AVENUE, NEW YORK, N. Y.**

*(Continued from Page 68)*

Downey, Calif., plant, **North American Aviation Inc.** He formerly was director of material at the Los Angeles division.

**Michael Buryk** was appointed superintendent of **Acme Steel Co.**'s Scarborough Works at Toronto, Ont., construction of which is now nearing completion. Mr. Buryk, formerly general foreman of manufacturing at Acme's Riverdale Works, Riverdale, Ill., joined the company 23 years ago.

**Carl Kalbfleisch**, vice president-production, **United Can & Glass Co.**, Hayward, Calif., was promoted to executive vice president.

**Marcus W. Keyes** was appointed to newly created position of sales engineer for **Pittsburgh Plate Glass Co.**'s fiber glass division, Pittsburgh.

**Herman A. Polderman** became associated with **Toledo Stamping & Mfg. Co.**, Toledo, O., as assistant to the president. He joined Caterpillar Tractor Co. in 1936, where for the last 16 years he has served in its engineering, metallurgical and production departments.

**R. M. Rowland**, western sales manager, **DeSoto Division, Chrysler Corp.**, Detroit, was appointed to the newly created post of director of merchandising. He is succeeded by **Paul Herpolsheimer Jr.**

**Paul F. Aaron** was appointed plant manager for **Cincinnati Tool Co.**, Cincinnati.

**John H. Fassett**, manager, clutch division, **Hilliard Corp.**, Elmira, N. Y., was elected a vice president. He continues as manager of the clutch division in charge of sales, engineering and service.

**B. B. Brownell** was promoted to assistant chief engineer in charge of design and development, **Electro-Motive Division, General Motors Corp.**, at LaGrange, Ill. **D. S. Smilach** becomes facilities engineer, **Bert Hefner** electrical section engineer and **L. L. Johnson** senior project engineer.

**Dr. Kenneth C. Vincent** was appointed supervisor of extraction metallurgy at **Armour Research Foundation**, Illinois Institute of

Technology, Chicago. Before joining the foundation he was chief metallurgist for the Baroid Sales Division of National Lead Co. Houston.

**Lewis M. Fulton**, former assistant general superintendent at the **Minion Steel & Coal Corp.**'s steel plant in Sydney, N. S., was appointed acting general manager of **Canadian Tube & Steel Products Ltd.**, Montreal.

**Dr. Edmund C. Harder**, senior geologist for **Aluminum Ltd.** and its subsidiaries since incorporation of the company in 1928, was appointed a member of the board of directors, filling a vacancy created by the death of **Leighton McCarthy**.

**W. R. Sugg Jr.** was appointed assistant manager and **G. A. Moore** as manager of manufacturing and the transportation and general division, **Westinghouse Electric Corp.**, Pittsburgh.

**William F. Wrightnour** was appointed assistant to the vice president and general manager, **United States Rubber Co.**, New York. He is succeeded by **Patrick H. Kelley** as director of training for the division.

**Whitfield Chemical Co.**, Detroit, appointed **Nathan H. Bryant** as western Michigan representative. He formerly was with **Attwells Brass Co.**, Grand Rapids, Mich., and now will have headquarters in that city.

**Thomas E. Hughes** was made general manager of the **Cleveland Diesel Engine Division, General Motors Corp.**, to succeed **George W. Crompton**, retired after 36 years of service with the corporation. **Edward A. Kaegi**, factory manager of GM's **Delco Radio Division**, becomes general manager of the **Detroit Transmission Division**, succeeding **Victor A. Olsen**, also retired after 37 years' service with the corporation. **Paul W. Rha**, assistant general manager, **Allis-Chalmers Division**, becomes general manager of the **New Departure Division**, **Bristol, Conn.**, succeeding **Robert E. Walker**, granted a leave of absence.

**John H. Wintersteen** was promoted to manager of public relations and advertising for **Kaiser Metal Products**,



MICHAEL BURYK  
... a works supt. of Acme Steel



HERMAN A. POLDERMAN  
... joins Toledo Stamping & Mfg.



JOHN H. FASSETT  
... V. P. Hilliard Corp.

ound advice...

**"LOOK-  
before you LEAP!"**



If you are considering plans for expansion of present heat treating facilities or new plant construction, "Look Before You Leap"—check with an MTI commercial heat treater.

The chances are that you will find a Commercial Heat Treater near your plant with the facilities, equipment, skill and experience to perform "custom-tailored" heat treating operations required for your prime or sub-contract rearmament program work.

#### Eliminate Personnel Problems

All members of the Metal Treating Institute are specialists with complete service facilities under roof. They offer you a variety of skills—handling and processing types of heat treating from sim-



It is good business to avoid possible repetition. Remember, even if only Government money is involved at

**CLOSED**

the present time, you will pay part of the cost eventually. Conservation of Government spending is always of benefit to you.

#### A Good Policy

When faced with heat treating problems, or the need for heat treating services, contact the Metal Treating Institute or any MTI member listed on this page. All detailed inquiries receive prompt attention.



Consult these Companies\*

#### There's a Heat-Treating Specialist Near Your Plant!

Benedict-Miller, Inc.  
Lyndhurst, New Jersey  
California-Doran Heat Treating Co.  
Los Angeles 23, California  
Commercial Steel Treating Corp.  
Detroit 4, Michigan  
Cook Heat Treating Co. of Texas  
Houston 11, Texas  
The Dayton Forging & Heat Treating Co.  
Dayton 3, Ohio  
The Drever Company  
Philadelphia 33, Pennsylvania  
Greenman Steel Treating Company  
Worcester 5, Massachusetts  
Fred Heinzelman & Sons  
New York 12, New York  
Alfred Heller Heat Treating Co.  
New York 7, New York  
Hollywood Heat Treating Co.  
Los Angeles 38, California  
Industrial Steel Treating Co.  
Oakland 8, California  
L-R Heat Treating Company  
Newark, New Jersey  
The Lakeside Steel Improvement Co.  
Cleveland 14, Ohio  
Lorenz & Son  
Philadelphia 22, Pennsylvania  
Metal Treating, Inc.  
Milwaukee 4, Wisconsin  
Metallurgical Control Labs.  
Minneapolis 7, Minnesota  
Metallurgical, Inc.  
Kansas City 8, Missouri  
Metlab Company  
Philadelphia 18, Pennsylvania  
O. T. Muehlemeyer Heat Treating Co.  
Rockford, Illinois  
New England Metallurgical Corp.  
South Boston 27, Massachusetts  
Paulo Products Company  
Saint Louis 10, Missouri  
Pearson Industrial Steel Treating Co.  
Chicago 50, Illinois  
Pittsburgh Commercial Heat Treating Co.  
Pittsburgh 1, Pennsylvania  
The Queen City Steel Treating Co.  
Cincinnati 25, Ohio  
Reliable Metallurgical Service, Inc.  
Cleveland 14, Ohio  
J. W. Rex Company  
Lansdale, Pennsylvania  
Stanley P. Rockwell Company  
Hartford 5, Connecticut  
Winton Heat Treating Company  
Cleveland 16, Ohio

National Trade Association  
COMMERCIAL HEAT TREATERS

**METAL TREATING INSTITUTE**

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NEW YORK

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# ABSOLUTE *TO TOLERANCE* CONTROL



When job specifications leave no leeway, when extreme tolerances must be maintained . . . that's when the built-in precision and absolute tolerance control of Grand Rapids Grinders proves most valuable. Defense commitments make it im-

possible for us to fill your orders as rapidly as we'd like to . . . but we know our customers can appreciate the reasons for delay. As always, we're doing our best to serve you.  
**GALLMEYER & LIVINGSTON CO.**  
307 Straight Ave., Grand Rapids, Mich.



GRAND RAPIDS GRINDERS

**GALLMEYER  
& LIVINGSTON**

*...the very best*

Manufacturers of  
SURFACE GRINDERS • CUTTER and TOOL GRINDERS • TAP and DRILL GRINDERS

Inc. at Bristol, Pa. He leaves  
er Steel Corp.'s Oakland, Calif.,  
ce.

A. Ringis was appointed plant  
ager of Chrysler Motors Los  
geles plant, Plymouth Division,  
succeed C. C. Rowles, assigned  
cial duties on the staff of F. L.  
Cavite, operating manager of  
entire Plymouth Division.

ier Co. Inc., newly incorporated  
n of engineers and designers,  
blished offices at 5209 Euclid  
, Cleveland. It is headed by  
liam S. Renier, president, who  
the last two years was director  
engineering of Hydraulic Press  
Co., Mt. Gilead, O. H. F.  
cher of Fischer & Associates,  
veland, was elected vice presi-  
nt of the new corporation and  
W. Sahley, president of Euclid  
Engineering Co., is secretary-  
asurer.

liam B. Kempton was made  
es manager and Gerald D. Fish-  
assistant sales manager of the  
ardware products department,  
ckwire Spencer Steel Division,  
orado Fuel & Iron Corp. They  
ntinue to be located in the sales  
ice, hardware products depart-  
nt, at the subsidiary, American  
e Fabrics Corp., Mt. Wolf, Pa.

the industrial chemicals divi-  
n, American Cyanamid Co.'s met-  
chemicals section, Paul J. Kondla  
is named eastern regional repre-  
tative replacing A. E. Broady,  
o will serve as a representative  
the Cleveland district.

ew Jersey Zinc Co., Palmerton,  
ppointed David L. Gamble  
ager of research to succeed  
rge F. A. Stutz, transferred to  
New York office.

Clinton Grove retired from  
w-Knox Co., Pittsburgh. He  
ed the company in 1920 as ad-  
vertising manager and in 1944 was  
ed assistant to the executive  
president.

M. Iacqua was appointed field  
ineer for Lamson Corp. in the  
western New York territory with  
quarters in Buffalo.

Pontiac Motor Division, General  
ors Corp., Pontiac, Mich.,  
rles O. Johnson was promoted  
(Please turn to Page 110)

# Extensive Stock OF KENNAMETAL TOOLS, BLANKS, and INSERTS

## NOW CARRIED BY OUR DISTRICT WAREHOUSES

AT STRATEGIC POINTS

### "ACROSS THE MAP"

CHICAGO  
CINCINNATI  
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DALLAS  
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HOUSTON  
LATROBE  
LOS ANGELES  
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SPRINGFIELD, MASS.

Phone the one nearest you  
if your need is urgent

This expanded service enables  
you to quickly realize the plus  
value of Kennametal tooling —  
decreased cost — increased produc-  
tivity. There's a Kennametal tool  
for your every need.

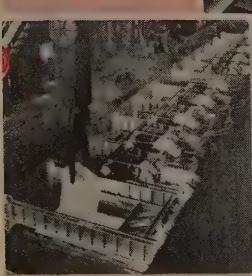
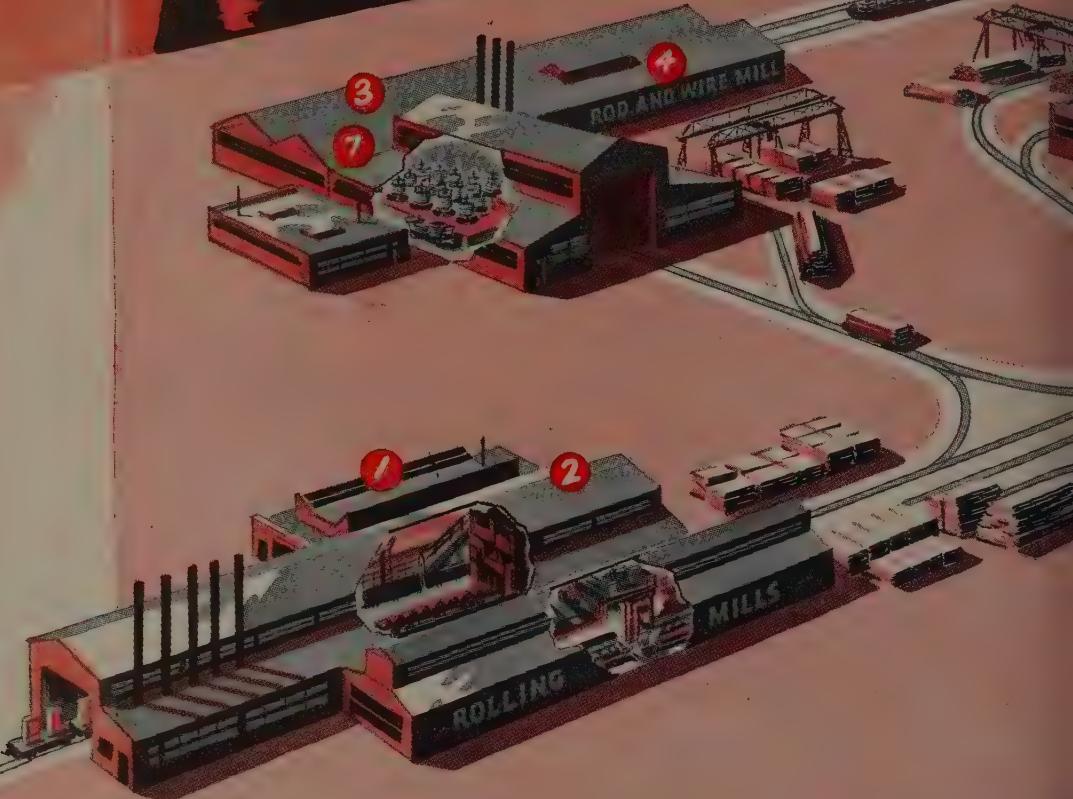
If you desire help in tooling  
problems — selection, application,  
or maintenance — our field engi-  
neers are at your service.

Kennametal Inc., Latrobe, Pa.

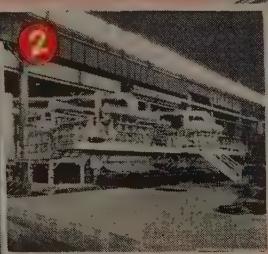
**KENNAMETAL®**  
CEMENTED CARBIDE TOOLING  
THAT INCREASES PRODUCTIVITY



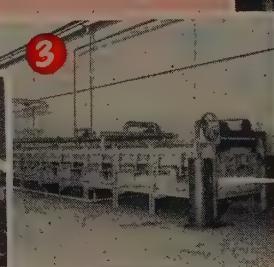
# from INGOT to FINISHED PROD



One-way fired  
recuperative soaking pits.



Continuous triple-fired  
slab and billet furnace.



Continuous wire  
patenting furnace.

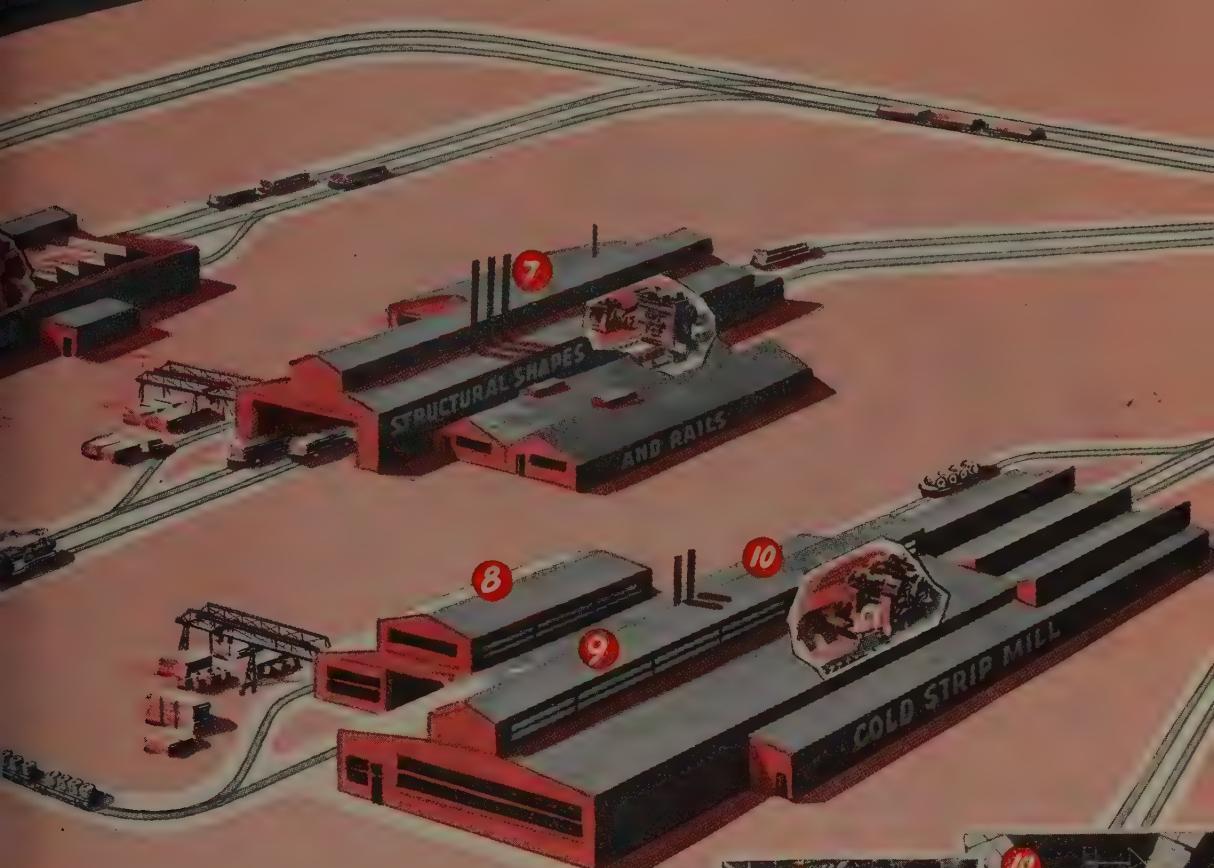


Continuous roller  
restoration anneal

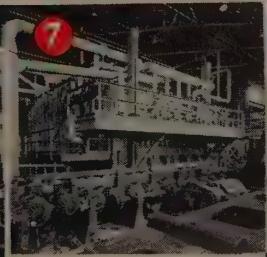
# Surface

SERVES THE STEEL INDUSTRY

SURFACE COMBUSTION CORPORATION, TOLEDO, OH



High-speed stress relief  
machines for steel tubing.



Continuous billet  
reheating furnace.



Controlled atmosphere  
coil annealing covers.



Continuous strip  
annealing of tin plate.

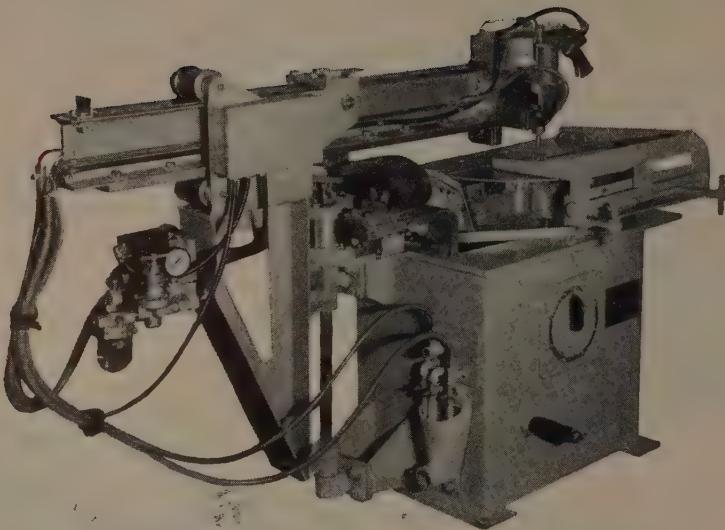


Continuous strip  
galvanizing lines.



IN HUNDREDS OF SUCCESSFUL INSTALLATIONS, IS LIVING UP  
ITS REPUTATION FOR BIG TONNAGE . . . END RESULTS OF THE  
GHEST QUALITY...DEPENDABLE PERFORMANCE SECOND TO NONE!

"A GREAT PRODUCTION NAME IN THE STEEL INDUSTRY"



## the \$7500 welder that saved \$25,000 the first year

A machine that increased production enough to effect savings that were double or triple the machine cost during the first year is news to many fabricators not familiar with the versatility of the modern resistance welder. With one man this machine will take the place of four conventional guns and two rocker arm welders requiring a total of six operators. It also eliminates the loss of production due to the unnecessary shifting of the work pieces between operations.

Here is factual proof that special equipment effecting cost saving need not be expensive.

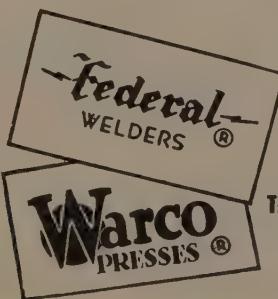
Recent Federal designed and built machines have combined assembly with welding, forming with welding

and high speed multiple-shop welding of complete assemblies.

This is part of the reason why—from the start—Federal has always been First In Resistance Welding.



This inner bulkhead assembly for an automatic dryer requires about 50 spot welds. Federal designed a new type expansion gun welder (above) where the gun is supported on the end of a horizontal beam mounted on rollers—moves in all directions—automatically welds as operator squeezes pistol trigger. Manufacturer figures this has saved \$25,000 over old method during first year.



THE FEDERAL MACHINE & WELDER COMPANY  
WARREN, OHIO

to assistant to the general manufacturing manager to succeed David J. Dunlop, retired. Charles DeLorge succeeds Carl F. Mann, retired, as motor plant superintendent, and is succeeded by G. Robert Scharf as superintendent of the 40 mm automatic can plant.

Walter R. Hillman was appointed assistant to the vice president in charge of production at Eutech Welding Alloys Corp., Flushing, N. Y. Joseph Quaas was appointed manager, electrode production division and Andre Jaccard, assistant to the executive vice president.

Edwin P. Crenshaw was appointed general sales manager, coach division, GMC Truck & Coach Division, General Motors Corp., Pontiac, Mich. He succeeds Herbert E. Leman, retired. Mr. Crenshaw was succeeded by Alvin S. McEvoy, assistant general sales manager.

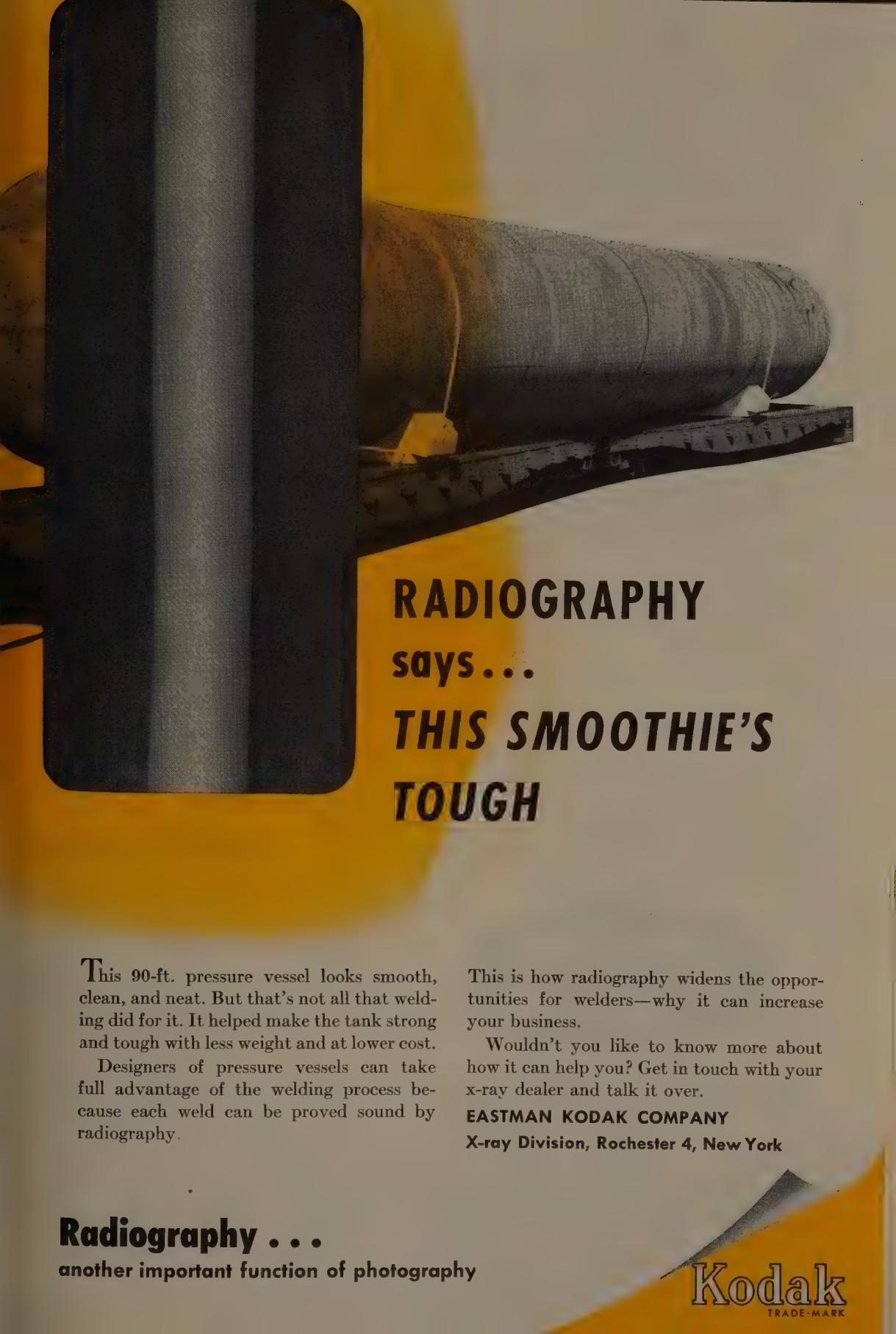
Formerly associated with Weller Instruments Co., the following have joined Taco West Corp., Chicago: Charles T. Laechelt becomes purchasing agent, Ardmore M. Williams, assistant sales manager, Edward O. Marquardt chief mechanical engineer, and Charles B. Koenig, production manager.

Irving R. Lewis was promoted to vice president, Syracuse Stamp Co., Syracuse, N. Y. He will handle production and purchasing.

Theodore V. Purvin was appointed general sales manager, Amgear



THEODORE V. PURVIN  
... Amgear's gen. sales mgr.



# RADIOGRAPHY says... **THIS SMOOTHIE'S TOUGH**

This 90-ft. pressure vessel looks smooth, clean, and neat. But that's not all that welding did for it. It helped make the tank strong and tough with less weight and at lower cost.

Designers of pressure vessels can take full advantage of the welding process because each weld can be proved sound by radiography.

This is how radiography widens the opportunities for welders—why it can increase your business.

Wouldn't you like to know more about how it can help you? Get in touch with your x-ray dealer and talk it over.

**EASTMAN KODAK COMPANY**

X-ray Division, Rochester 4, New York

## Radiography . . .

another important function of photography

**Kodak**  
TRADE-MARK



there's a *right*  
tool for every job  
and  
a "right" fastener...

You wouldn't intentionally slow down your production lines with inefficient tools or use the wrong machine for the job at hand. Isn't it equally logical to make sure that every fastening job is done with a fastener that is "just right"?

Differences in hardness and thickness of the tapped material require selection of the right type of tapping screw thread. This, in turn, works best with selection of the right hole size.

Lamson fastener engineers can advise you how to reduce the variety of fasteners and sizes at each assembly station, cut costs and improve assembly.

Lamson control of quality and Lamson design produce low drive torques—high strip torques. Solve your fastening problems with Lamson Tapping Screws.



...specify  
*Lamson*  
tapping screws



**MACHINE SCREWS**  
Precision made for fast economical assembly.



**SEMS**  
Pre-assembled lockwashers on tapping and machine screws.

**The LAMSON & SESSIONS Co.**  
1971 West 85th St. • Cleveland 2, Ohio

Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

Check the products below that interest you; tear off bottom of ad and send to us for complete information.



**TAPPING SCREWS**  
Choice of round, pan, truss, flat oval, hexagon and Phillips heads.



**CAP SCREWS**  
• 1035" Hi-Tensile  
Heat-treated steel



**SQUARE AND HEX MACHINE SCREW NUTS**  
Semi-finished, hot pressed, cold punched.



**LOCK NUTS**  
Economical, vibration proof. Can be used repeatedly.



**COTTER PINS**  
Steel, brass, aluminum and stainless steel.



**"1035" SET SCREWS**  
Cup point type, hardened and heat-treated.

the A-B-C of M-S-T



ROBERT GRIFFIN  
div. supt., Bingham-Herbrand

Chicago, subsidiary of Hupp  
Corp.

Bingham-Herbrand Corp., Fremont, O., promoted Robert Griffin to general superintendent, aviation division. He has been superintendent in the division's forge shop which produces buckets and blades for jet engines.

William D. Banks is Canadian sales supervisor, Link Welder Corp., with headquarters at Windsor, Ont.

Andrew C. Perrin was appointed to the newly created post of West Coast district sales manager, Reference Electric & Engineering Co., with headquarters in San Francisco. Keith E. Carter, sales engineer Pittsburgh since 1950, was transferred to the Chicago office replacing Mr. Perrin. J. Edward House was named to the Pittsburgh area.

American Pulley Co., Philadelphia, appointed Henry H. Hamilton, formerly advertising manager, to assistant manager, materials handling division; Joseph C. Salette Jr., formerly St. Louis district manager, to sales promotion and advertising manager; G. L. Michel to St. Louis position; S. S. Stuart district manager at Philadelphia; J. J. McFarland, district manager of the Minneapolis office.

Philip E. Knight was promoted from assistant general manager, chemical division, to vice president Kaiser Aluminum & Chemical Corp., Oakland, Calif., in charge of

A LWAYS MAKES POSSIBLE  
B ETTER PRODUCTS  
C AT LOWER COST

## Michigan Electric Resistance WELDED STEEL TUBING

A  
Quality  
Product

### ROUND

3/8" to 4" O.D. 9 to 22 gauge

### SQUARE-RECTANGULAR

1/2" to 2" 20 gauge, 1" to 2 1/4",  
14, 16, 18 gauge

Carbon 1010 to 1025

### Michigan Tubing

has uniform strength, weight, ductility, I. D. and O. D., wall thickness, machinability, and weldability. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted, and rolled. Available in a wide range of sizes, shapes and wall thicknesses, prefabricated by Michigan or formed and machined in your own plant.

### Muffler Inlet Pipe

This is an excellent example of Michigan workmanship in the performance of several intricate fabricating operations to most exacting tolerances.

The pipe manifold end is expanded to 2.225" I. D., a flange superimposed, and a flanged ferrule press-fitted for immediate assembly to exhaust manifold. Two bending operations with minimum reductions permit full flow of gas to hold back-pressure to a minimum. Muffler end diameter of tube is increased by expanding and a bead superimposed to form a "gas-tight" joint.

Michigan engineering and fabrication know-how make for accuracy and economy in the manufacture of this, and many other tubular products. Why not consult Michigan about your fabrication problem.



Consult us for engineering and technical help in the selection of tubing best suited to your needs.

Plus Fabricating of our own tubing Michigan is interested ONLY IN THE  
FABRICATION OF Stainless steel, copper, brass and aluminum tubing.

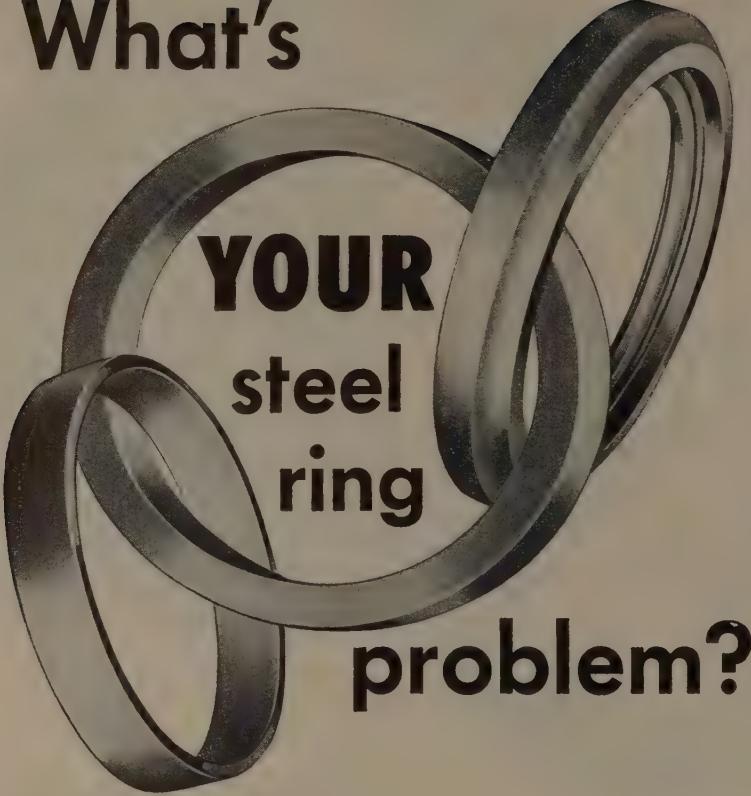
RESISTANCE WELDED STEEL TUBING  
Michigan STEEL TUBE PRODUCTS CO.  
THE OLDEST NAME IN ELECTRIC

More than 35 Years in the Business  
9450 BUFFALO STREET • DETROIT 12, MICHIGAN

FACTORIES: DETROIT, MICHIGAN—SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland Co., Dayton, Ohio—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—Strong, Carlisle and Hammond Co., Cleveland, Ohio—Globe Supply Co., Denver, Colorado—W. A. McMichael Co., Upper Darby, Pa.—A. J. Fitzgibbons Co., Buffalo, N. Y.—Harry E. Clark & Co., Houston, Texas—J. B. Beard Co., Inc., Shreveport, La.—Clark Co., Birmingham, Alabama.

# What's



YOUR  
steel  
ring

problem?

With forty years' experience in manufacturing circular rolled and welded steel parts for industry, Cleve-Weld engineers specialize in solving ring problems. If your contracts call for parts utilizing stainless steel or other types of rings or bands, call on Cleve-Weld. We have the equipment, the skilled man-power and engineering to assure quick delivery with economy and accuracy of production. Write for Cleve-Weld's General Catalogue today.

**CLEVELAND WELDING COMPANY**  
West 117th Street and Berea Road, Cleveland 7, Ohio  
Subsidiary of  
**AMERICAN MACHINE & FOUNDRY CO.**  
NEW YORK



**Specialists in RINGS • BANDS • WELDMENTS**

research and development. Other appointments include W. R. Woodman to manager of the aluminum division's raw material operations; Frank M. Cashin to manager of the chemical division; Jack W. Wilson Jr. to assistant to the vice president and general manager of the corporation; and R. A. Fratello to head the analysis and planning department.

Named assistant general superintendents at Kaiser Steel Company, Fontana, Calif., Works, are: Clarence R. Lohrey in charge of expanded iron and steel products facilities; Thomas G. Simison in charge of the diversified rolling mill operations; Ernest F. Donatici in charge of maintenance services, utilities and transportation; James P. Williams, assistant to the general superintendent, in charge of industrial and plant engineering, plant safety and traffic department; and Edward J. Duffy, manager of raw materials development and responsible for operations at Kaiser Steel Corp. iron ore and coal mines.

Fred Bode was appointed district manager of sales for Wisconsin Lapham-Hickey Co. His headquarters are Milwaukee. He succeeds Dave Devine, retired.

Richard Stockton was made northeast district manager, St. Paul Branch, of the Hydraulic Hoist, Minneapolis.

Peter B. Tursi was appointed chief metallurgist of the Riverside Metal Co., Riverside, N. J. He has been



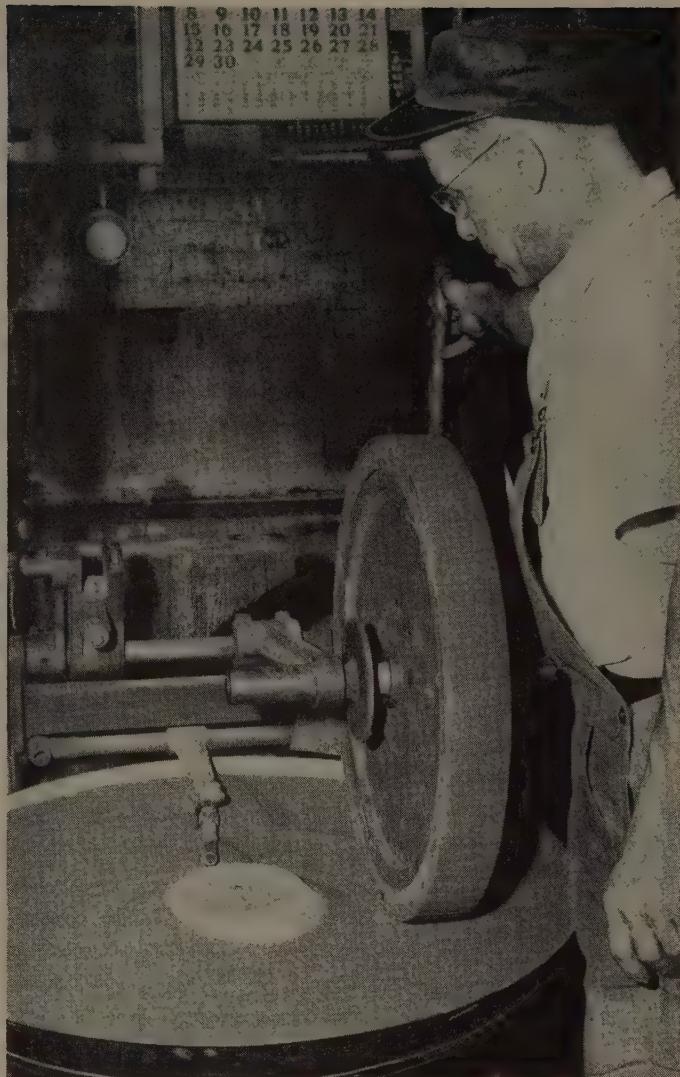
**PETER B. TURSI**  
... chief metallurgist at Riverside Metal

# Put these practical tips to work for you

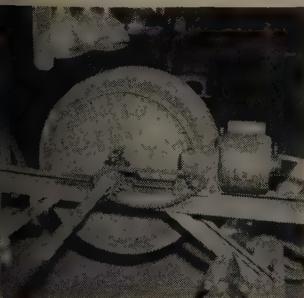
44-page book shows you how to set up metal polishing wheels and belts



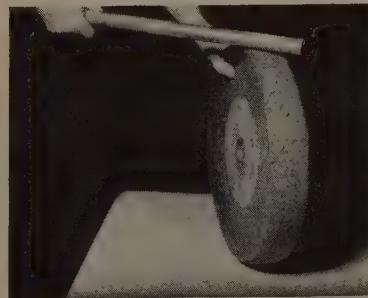
Plan now to take advantage of the wealth of information in the Norton Booklet No. 1340, "Setting Up Polishing Wheels and Belts." This useful booklet tells how to prepare the glue, how to set up wheels using either glue or cement, how to set up abrasive belts, how to get the best results from polishing. It contains detailed information on abrasive grain for polishing, including tables for selecting grains. Norton Company, Worcester 6, Mass. Distributors in all principal cities. Export: Norton, Behr-Manning Overseas Inc., Worcester 6, Mass.



**HOW TO SET UP** a polishing wheel. Glued wheel, shown here, is automatically rolled in a trough of abrasive grain. To minimize jelling, the setting-up operation is carried out as quickly as possible.



**TO DRY** a polishing wheel. Infrared lamps dry wheels faster and permit faster inventory of wheels. Note mechanism for rotating wheels easily. Dry room maintains temperature 70° F. and 50% relative humidity. When cracks readily, it is dry.

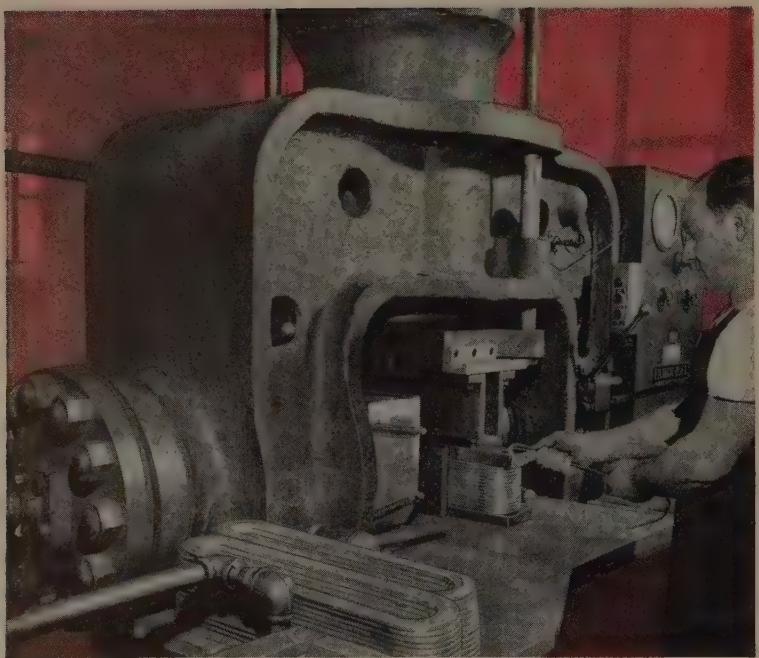


**HOW TO CRACK** the wheel head. Wheel face is hit at about a 45° angle, being struck completely around the wheel once or twice. It is then hit at an angle that forms an "X" with the first series of cracks. A round bar or pipe, *not a sharp tool*, is used.

**NORTON**

**ABRASIVES**

*Making better products  
to make  
other products better*



**How this 2-way**

# **FARQUHAR** **Hydraulic Press**

**forms motor and generator coils**

In producing motor and generator coils from  $\frac{1}{4} \times 1$ -in. copper stock, the stock is first bent and the ends laminated, and then pressed to restore them to their original thickness. Then, the coil is put in this Farquhar 2-way Hydraulic Press for "pressing" the form.

The coil is laid on a steel block, a three-part filler mandrel inserted, and a top block applied. The press "snugs" the coil sides at low pressure (40 tons); then the vertical ram snugs the top. The operator kicks the pressure-shift pedal, to double vertical-ram pressure for forming.

Capacities of rams are 100 tons horizontally and 200 tons vertically. Illustration above shows operator withdrawing the coil after forming has been completed.

#### **Farquhar Presses Cut Your Costs**

The above installation is just one more

example of Farquhar performance in heavy production! Farquhar Presses are built-for-the-job . . . assure faster production due to rapid advance and return of the ram . . . greater accuracy because of the extra guides on the moving platen . . . easy, smooth operation with finger-tip controls . . . longer life due to positive control of speed and pressure on the die . . . long, dependable service with minimum maintenance cost!

Farquhar engineers are ready to help solve whatever production problem you may have. Their expert assistance is yours for the asking. Give them a call . . . at no obligation, of course!

Or, send for our free catalog showing Farquhar Hydraulic Presses in all sizes and capacities for all types of industry. Write to: THE OLIVER CORPORATION, A. B. Farquhar Division, Hydraulic Press Dept., 1522 Duke St., York, Pa.

associated with the company since 1936 when he began as a production worker.

Frank Scarr was promoted by Kaiser Steel Corp., Oakland, Calif., assistant to the vice president in charge of operations. He previously was assistant controller. Carter H. Gray was made assistant superintendent of the continuous wire pipe mill at the Fontana Works.

Raybestos-Manhattan Inc., Passaic, N. J., appointed W. Ward Kieve treasurer to succeed the late George R. Weber. Mr. Kieve, also comptroller and a director, William S. Simpson was named general manager, Raybestos Division, succeeding Robert B. Davis, retired. Mr. Simpson is also secretary and director of the corporation. Born H. Cilley succeeds Mr. Weber as general manager of U. S. Raybestos-Grey-Rock Division at Mifflinheim, Pa., where S. R. Zimmerman Jr. will be assistant general manager.

Herbert E. Fenton was named Pittsburgh area mining sales and service engineer for Carboloy Department, Detroit, General Electric.

P. Grant Forman, executive president, was elected president of Industrial Silica Corp., Youngstown. Myron E. Ullman was named vice president. Jacob S. Coxey, president, has retired due to health. He continues as chairman.

C. P. Desmond, assistant treasurer of Bethlehem Pacific Coast Silica Corp., San Francisco, retired after 43 years of service with Bethlehem Pacific and predecessor companies.

Robert M. Healey was appointed general manager and director of United-Carr Fastener Co., Hamilton, Ont.

Alexander Daignault was elected director of Baird Associates, Cambridge, Mass., to replace William Elfers, resigned.

DeWalt Inc. appointed Claydricks Chicago district manager to replace Truman Jones who gave full time to government sales.

Howard A. Reid, former advertising and sales promotion manager of General Cable Corp., joined A.

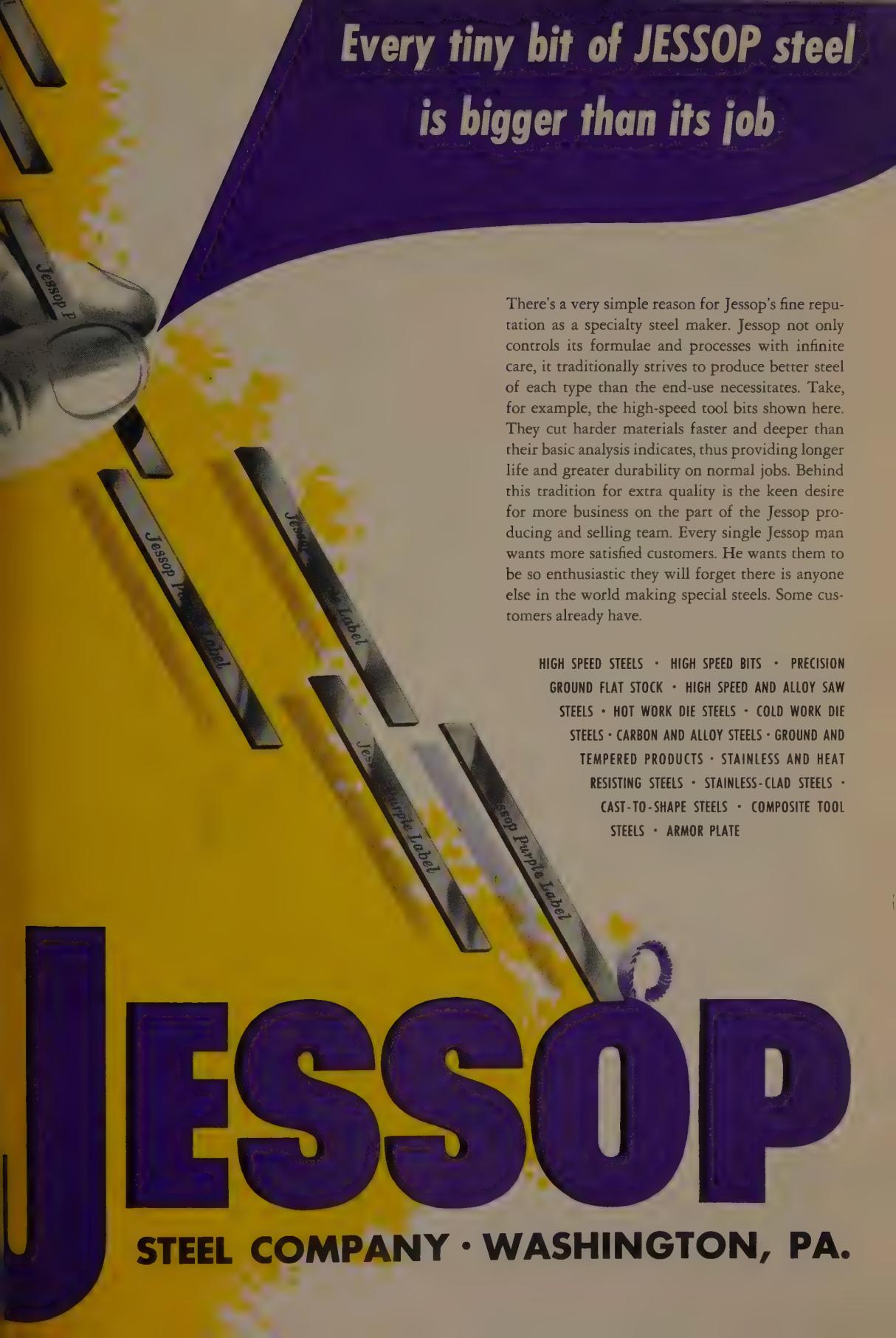
**Farquhar**  
**HYDRAULIC PRESSES**

for Bending • Forming • Forging • Straightening • Assembling • Drawing  
Extruding • Joggling • Forging • and other Metalworking Operations

THE OLIVER CORPORATION • A. B. FARQUHAR DIVISION

Every tiny bit of JESSOP steel

is bigger than its job



There's a very simple reason for Jessop's fine reputation as a specialty steel maker. Jessop not only controls its formulae and processes with infinite care, it traditionally strives to produce better steel of each type than the end-use necessitates. Take, for example, the high-speed tool bits shown here. They cut harder materials faster and deeper than their basic analysis indicates, thus providing longer life and greater durability on normal jobs. Behind this tradition for extra quality is the keen desire for more business on the part of the Jessop producing and selling team. Every single Jessop man wants more satisfied customers. He wants them to be so enthusiastic they will forget there is anyone else in the world making special steels. Some customers already have.

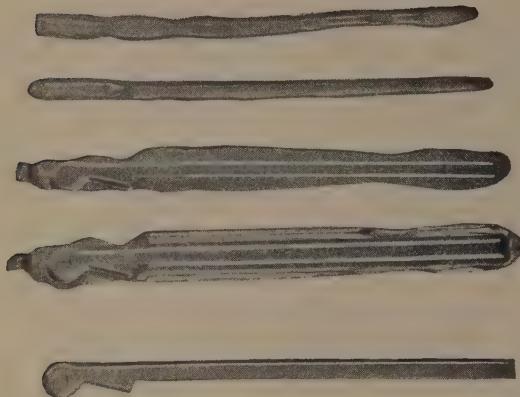
HIGH SPEED STEELS • HIGH SPEED BITS • PRECISION  
GROUND FLAT STOCK • HIGH SPEED AND ALLOY SAW  
STEELS • HOT WORK DIE STEELS • COLD WORK DIE  
STEELS • CARBON AND ALLOY STEELS • GROUND AND  
TEMPERED PRODUCTS • STAINLESS AND HEAT  
RESISTING STEELS • STAINLESS-CLAD STEELS •  
CAST-TO-SHAPE STEELS • COMPOSITE TOOL  
STEELS • ARMOR PLATE

# JESSOP

STEEL COMPANY • WASHINGTON, PA.

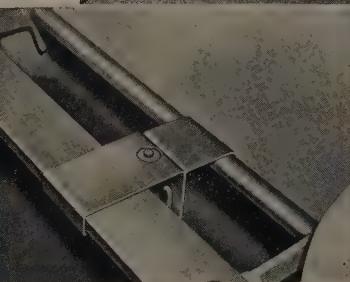
# CECO-DROP SHORT STROKE CONTROL

*Makes the Hammer Talk!*



An installation of a Short Stroke Control on a 2500 lb. CHAMBERSBURG CECO-DROP HAMMER is shown, forging steel ankle joints for leg braces. Above are samples of the forging as it appears during various stages. The forging process begins with a series of 20 to 23 short, rapid blows (about 18" stroke) to draw the  $2\frac{1}{2}$ " dia. stock. This is followed by two long blows (about 35" stroke) to roll it, three more long blows in the rough impression, and three more long blows to complete the forging. After the last blow the ram is stopped on the up-stroke at the "short blow" position for the next forging.

Short Stroke Control is but one of the many features of Chambersburg CECO-DROPS. These piston lift, gravity drop hammers are setting new standards in forge shop production. Lower operating costs, minimum down time, easy operation, wide range of operations, extra safety; all add up to "more forging per hour" the basis on which to judge the efficiency of a Drop Hammer. Write for Bulletin 11-L-0.



(Above right) Dog in full stroke position. Wedge is lifted, Short Stroke Control is inoperative.

(Above left) Dog in Short Stroke Position. Wedge is down, holding dog in operating position.

(Lower left) Button on treadle when depressed by operator shortens the stroke. Release reverts to full stroke.

CHAMBERSBURG ENGINEERING COMPANY, CHAMBERSBURG, PA.

# CHAMBERSBURG

## THE HAMMER BUILDERS



EDWARD J. ENGLAND  
a V. P., Chicago Freight Car & Parts

Machine & Foundry Co., New  
as advertising and sales pro-  
manager, general products

ard J. England was promoted  
general manager to vice pres-  
in charge of operations for  
go Freight Car & Parts Co.  
new position, Mr. England  
ues to supervise operations  
company's shops in Chicago,  
p., Colo., and Auburn, Wash.  
dition he is responsible for all  
asing functions.

ng Hardware Mfg. Co., Chi-  
promoted James D. W. Lloyd  
les manager. Thor Ohman  
the company as product en-

m M. Martin, formerly vice  
ent-sales for Crittall Inc., has  
Ceco Steel Products Corp.  
istant manager, steel window  
ment. His headquarters are  
icago.

y M. Rumbough Jr., now as-  
to the secretary of com-  
in the new administration,  
ed as president of Metal Con-  
Corp. and secretary and di-  
of sales of White Metal Mfg.  
 Hoboken, N. J. H. Robert  
formerly assistant director,  
ointed director of sales of  
 Metal Mfg., and Charles  
ni, plant manager becomes  
ury.

Murray was appointed chief  
tistant for Hyster Co., Port-  
Dreg.

# ORTON

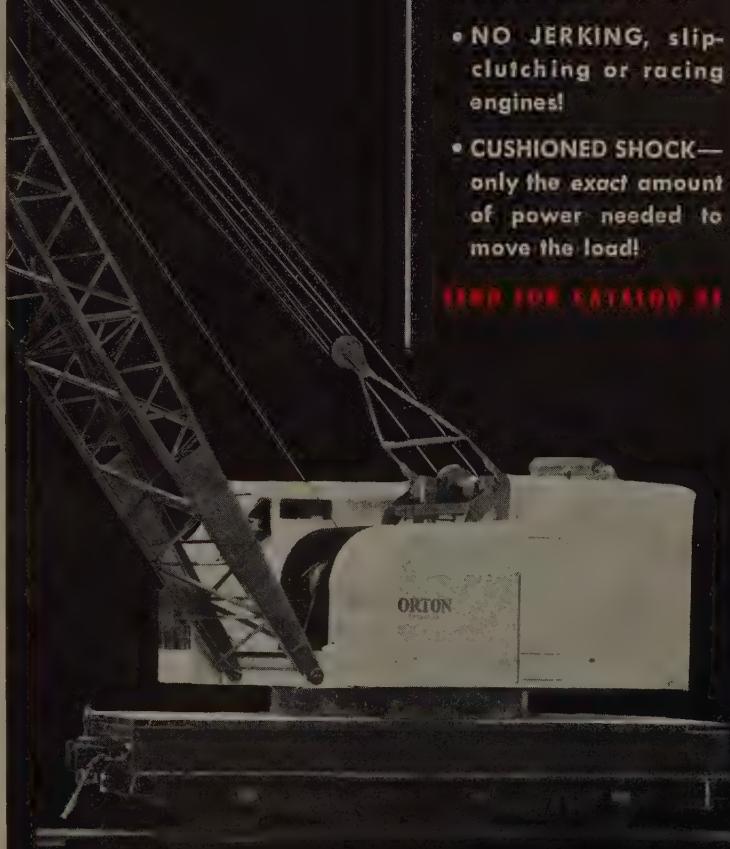
## Torque-Control

MEANS

### POWER CONTROL WEAR CONTROL

- NO JERKING, slip-clutching or racing engines!
- CUSHIONED SHOCK—only the exact amount of power needed to move the load!

SEND FOR CATALOG #1



**ORTON CRANE AND SHOVEL COMPANY**

608 SOUTH DEARBORN STREET • CHICAGO 5, ILLINOIS

PATENTED

# The U. S. Steel Supply team that gives you *personalized service*



**He keeps our service  
in step with your needs**

BECAUSE of his extensive background and experience in handling steel supply requirements, our Assistant District Manager is looked upon as the coach of the sales team. His knowledge of local steel users and buying policies, plus his administrative ability help the U. S. Steel Supply salesman give you the best possible service. No supply prob-

lem is too difficult, no emergency is beyond control when our salesmen and our Assistant District Manager go to work on it.

Call your U. S. Steel Supply salesman. Give him your order. No matter what the problem, it will be worked out efficiently and to your best interests by the members of our personalized service team.

**YOUR "ONE CALL" SOURCE OF STEEL SERVICE**

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HEADQUARTERS: 208 So. LA SALLE ST., CHICAGO 4, ILL. WAREHOUSES AND SALES OFFICES:

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TULSA • YOUNGSTOWN



UNITED STATES STEEL

# NEW

# PRODUCTS and equipment

Reply cards on page 135 will bring you more information on any new products and equipment in this issue

## Trim Routing Machine

### ... for large nonferrous sections

Designed specially for the aircraft industry, the model 327-T is built for trim routing large and difficult-to-handle nonferrous sections. A selector lever and a simple change control two spindle speeds, 10,000 and 20,000 rpm. Physical dimensions include a 1/4-inch throat clearance and a 10-inch guide pin holder height of 4 inches. Adjustable distance on the guide pin holder end to



spindle face ranges from 3 to 15 inches. Maximum stroke is 6 1/4 inches. Ekstrom, Carlson & Co., Dept. ST, 1400 Railroad Ave., Rockford, Ill.

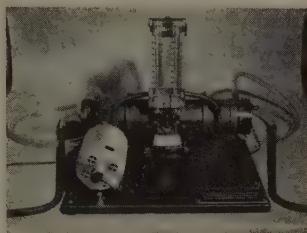
REPLY CARD—CIRCLE No. 1

## Filter Tester

### meters filter efficiency

This testing device provides an accurate measure of air filter efficiency on the job rather than in the laboratory. It incorporates test methods developed by the National Bureau of Standards to provide factual in-service ratings comparable for all types of air filters and cleaners.

Among advantages is a continuous record of filter efficiency over any given period of time. Efficiency is determined on normal air



contaminants, without applying synthetic dusts. The tester is compact and portable, weighing 20 pounds with proportions about the size of a typewriter. Trion Inc., Dept. ST, 1000 Island Ave., McKees Rocks, Pa.

USE REPLY CARD—CIRCLE No. 2

## Wire Drawing Die Checker

### ... measures entrance angles

Optical instrument measures entrance angles of wire drawing dies to an accuracy of plus or minus 10 minutes of arc without damaging



the die. Multiple angles and poor polish are obvious immediately. Every size of carbide wire drawing die can be measured accurately

down to dies as small as 0.005-inch.

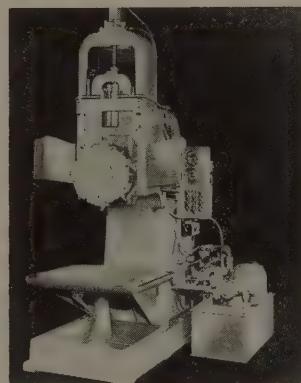
The instrument provides a practical shop instrument for checking die angles before they can affect wire quality. It is portable, constructed of lightweight aluminum castings with integral light source and transformer. Instrument Division, American Optical Co., Dept. ST, Buffalo 15, N. Y.

USE REPLY CARD—CIRCLE No. 3

## Drilling, Tapping Machine

### ... larger models available

Model 3-BH eight-spindle automatic hydraulic unit provides a larger capacity Burgmaster drilling and tapping machine. Drill capa-



city is 1 1/4-inch in mild steel. Machine has 12-inch spindle and head travel, 19-inch table travel. Throat clearance is 17 1/2 inches. Table work surface: 36 inches wide by 35 inches deep, with T-slots. Unit has a 10-hp, two speed motor. Spindles have Timken bearings.

Twelve preselective spindle speeds range from 167 to 1765 rpm—four to each spindle. Automatic cycling is provided through all sta-

# HERC-ALLOY

## SLING CHAINS

**PREFERRED...**  
because of  
proved advantages  
in use

Production Executives and Safety Directors look for many things in a sling chain—greatest strength, maximum safety, lighter weight, handling ease, resistance to wear, minimum cost against service life.

Because they found all these advantages in HERC-ALLOY by on-the-job experience, it became a matter of course to prefer and specify HERC-ALLOY Sling Chains.



Write for illustrated Data Book No. 3 which contains helpful information on sling chain selection and use.

### COLUMBUS MCKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corp.)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

District Offices: New York • Chicago • Cleveland

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., Can., and Johannesburg, South Africa.

tions. Burg Tool Mfg. Co., Co. D ST, 3743 Durango Ave., Los Angeles, Calif.

USE REPLY CARD—CIRCLE NO. 4

### Light Trolley Conveyor

... fully enclosed, continuous

Light, fully-enclosed continuous chain conveyor is built for a variety of overhead handling



applications. Its design eliminates complicated wearing parts and requires a minimum of maintenance.

Called the Chainveyor, the extremely flexible short radius curve and straight tubular track sections mean easy installation. Mathews Conveyor Co., Dept. ST, Ellwood City, Pa.

USE REPLY CARD—CIRCLE NO. 5

### Heavy Towing Tractor

... drawbar rating: 12,000 lbs.

Heavy industrial and aircraft towing requirements can be accommodated by this tractor's 12,000 pound drawbar full rating. A 6-cylinder Chrysler engine powers the tractor.



Fluid coupling, the manufacturer's unique axle design and a low silhouette are other features.

The 6-cylinder gasoline engine develops 114 bhp at 3200 rpm. The

# TO MAKE MORE STEEL FASTER ...WITH LESS FUEL

Most open hearth operators seal out excess cold air infiltration and reduce radiation losses by using *Therm-O-Flake* Insulation products. The result is higher preheat temperatures, sharper operating furnaces, with more tons of steel per hour and lower fuel cost per ton of steel produced.

**THERM-O-FLAKE** insulation products, including block, brick, coating, concrete and concrete aggregate, are designed especially to provide safe, complete insulation for steel plant service.

Write for new bulletin giving detailed recommendations for complete insulation of a typical open hearth furnace using **THERM-O-FLAKE** insulation products.

## **ILLINOIS CLAY PRODUCTS COMPANY**

Chicago, Illinois • 208 South LaSalle Street  
Joliet, Illinois • Barber Building



**THERM-O-FLAKE INSULATION**  
has been used in most of the new open  
hearth furnaces built in the United  
States in the past five years!

USE...

.... **THERM-O-FLAKE** INSULATION

three steps  
**to lower broaching costs**  
*the American way*

1



**AN American MACHINE**

American engineers design and build more than 50 models for surface and internal broaching. One of these standard models is probably the right model to speed your production, and lower your broaching costs. However, if yours is a special broaching problem, American can build you a special machine to beat that problem. Production bottlenecks are easily solved by American experience.

2



**AN American BROACH**

American broaches are designed with the same skill used on American machines. We know the demands placed on broaching tools by machines and we build accuracy and durability into every American tool. They maintain closer tolerances, and last longer because they are built the American Way.

3



**AN American FIXTURE**

Excessive handling of the part being broached costs you money. To get the most from your machine and your broaching tools you need a fixture to properly hold and handle the part during the broaching operation.

Because American builds all three — machines, broaches, and fixtures — we have the know-how to get the most from every fixture, every tool, every machine.

**WANT TO KNOW MORE ABOUT THE AMERICAN WAY OF LOWERING BROACHING COSTS**

Send for American Broach Catalog #450, 32 pages of useful information on American products that solve broaching needs. Or if you have a special broaching problem in your plant, just send a part print or sample and hourly requirements for our engineers' specific answer. Address Dept. S. No obligation of course.



**American BROACH & MACHINE CO.**  
A DIVISION OF SUNDSTRAND MACHINE TOOL CO.  
American Building - Ann Arbor, Michigan



the fluid coupling, this engine provides greater horsepower at lower engine speed, thereby cutting weight and extending life for the power unit.

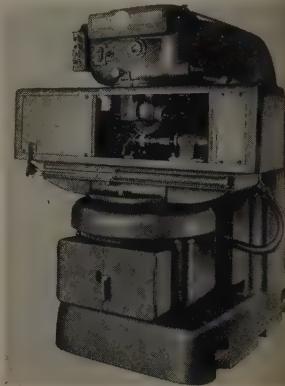
Model has four speeds forward with maximum 16.3 mph, and one reverse. Industrial Truck Division, Clark Equipment Co., Dept. S, Battle Creek, Mich.

USE REPLY CARD—CIRCLE No. 6

**Diagonal Gear Shaving Unit**

... automatic upfeed, return

Automatic precision up-feed selected increments throughout the shaving cycle and automatic return to proper backlash position are provided by a mechanism built into a diagonal gear shaving machine. This offers the user a choice



of conventional or diagonal shaving in the same machine.

For shaving diagonally, the cycle is no longer limited to two strokes. It can now include several cutting strokes, each with its own increment of up-feed, plus one or more idling strokes. Cycle time is decreased due to rapid up-feed. National Broach & Machine Co., Dept. ST, 5600 St. Jean Ave., Detroit 11, Mich.

USE REPLY CARD—CIRCLE No. 7

**Paralleling Drafting Board**

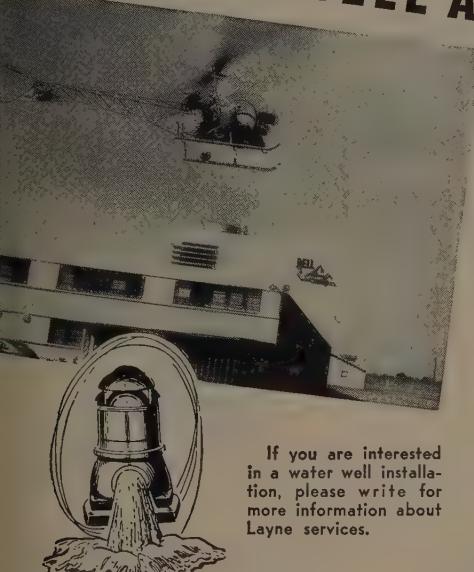
... other tools unnecessary

For architectural design and drafting, this redesigned drafting board makes the T-square and other drawing instruments unnecessary. Straight line, parallel and angular drawing require



## • are part of BELL AIRCRAFT'S amazing growth

# LAYNE WATER WELLS



If you are interested in a water well installation, please write for more information about Layne services.

One of America's most interesting sagas of industry, is the amazing growth of Bell Aircraft Corporation's Helicopter Division at Hurst, Texas. From this great plant Bell "eggbeaters" have gone to all parts of the world—both for war and peacetime service.

When Bell Aircraft selected a site for their big Texas plant, they immediately ordered the installation of a complete Layne Water Supply System. Today that single Layne installation is more than fulfilling all water supply needs for both manufacturing and employees—and apparently can continue to do so for many years to come. Layne is happy to name Bell Aircraft Corporation as another in a long list of important industrial organizations that own Layne Water Wells and Pumps.

**LAYNE & BOWLER, INC.**  
General Offices, Memphis 8, Tenn.

**Layne**

out obligation Layne will be glad to provide a complete file of late catalogs and literature on modern water supply wells and high capacity vertical turbine pumps.

**WATER WELLS**  
**VERTICAL TURBINE PUMPS**  
**WATER TREATMENT**

additional equipment except a 45° angle.

Rubber desk grips on back board hold it on any desk in a horizontal or angular position without



slipping. Transparent plastic indicator measures each parallel movement of the rule in fractions of an inch. Board sizes are available 12 x 13, 15 x 19 and 21 x 25 inches. Bradford Bailey Co., Dept. ST, Box 440, Elizabeth, N. J.

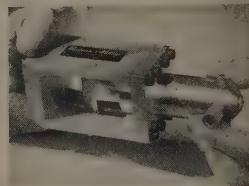
USE REPLY CARD—CIRCLE No. 8

### Explosive-Driven Chopper

... cuts 1 1/2-inch lines, cables

Bundles of cables 1 1/2 x 2 1/2-inches or fluid lines as large as 1 1/2 inches in diameter can be severed cleanly by the model 174-2-A-1 guillotine chopper. Modifications can be made to accommodate other cable or line sizes.

Chopper blade on this model is driven by a 38-caliber propellent



cartridge. The firing pin is situated remotely by explosive cord, ignited electrically from an explosion valve. Beckman & Whitley, Inc., Dept. ST, 965 San Carlos Ave., San Carlos, Calif.

USE REPLY CARD—CIRCLE No. 9

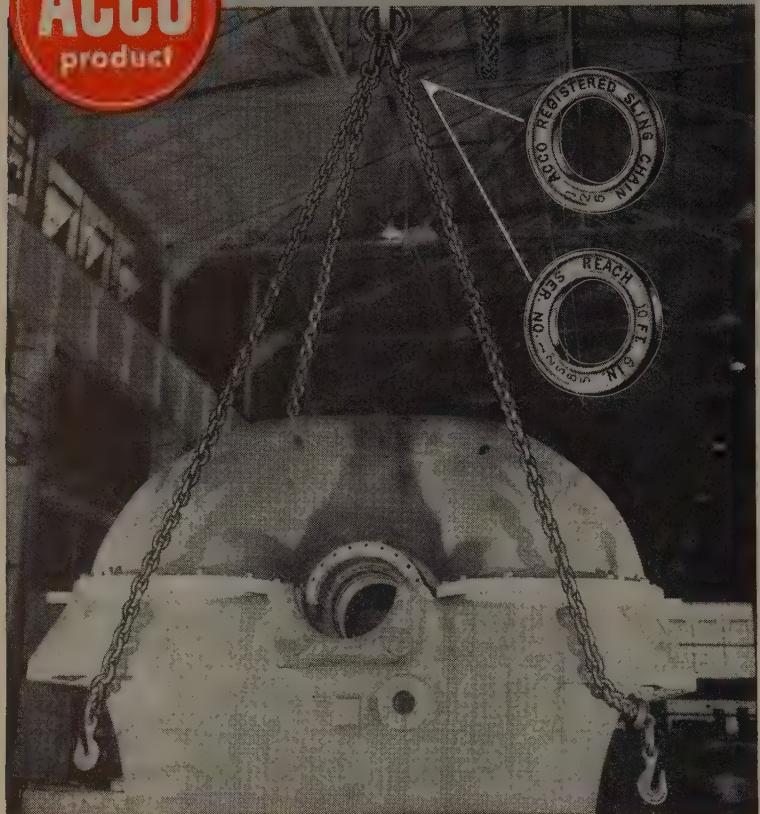
### Masonry Drill

... for continuous drilling

Hi-Twist drill can be used for continuous drilling of masonry materials as well as copper, brass and other soft metals. A combination



## AMERICAN CHAIN



### "Why do we use American Chain?"

"For two reasons," said this manufacturer of heavy machinery. "First, we have used American Chain successfully for years. Second, the high strength alloy it is made from permits using smaller diameter chain which is hooked up easily by our men. And the men like the way the grab hooks slip over the links and set themselves securely. I think they just feel safer working with American Chain."

This AMERICAN CHAIN user is referring to our 125 Endweldur alloy steel, heat-treated ACCO Registered sling chain with our series 40 drop-forged grab hooks.

No matter what chains you require, AMERICAN has them and will furnish chains that will last longer ... and cost less to use. Call your AMERICAN CHAIN distributor today and let him make recommendations. Or write to our York office for Bulletin DH-314.

**ACCO**



**AMERICAN CHAIN DIVISION**  
**AMERICAN CHAIN & CABLE**

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

**American  
Chain**



# 50 TONS of Stainless Steel a Day...

## Melted in this **AJAX-NORTHRUP** **INDUCTION FURNACE**

Every 1 $\frac{3}{4}$  hours, one of these Ajax-Northrup furnaces pours 10,000 pounds of top-quality stainless steel. Total capacity is well over 50 tons a day!

Composition is uniformly exact. Alloying elements are controlled within a fraction of a per cent in every melt. Carbon is consistently kept below 0.05%. Losses of expensive elements are negligible. Operating costs have been low enough to pay for the furnaces in just a few years!

This installation is typical of the growing use of induction melting for larger and larger jobs. In some of these, induction melting is the only way the job can be done. In others, it does the job better, faster, and at lower cost than any other melting method.

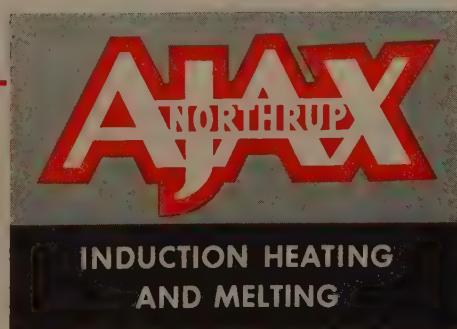
No matter what the job . . . or the quantity . . . Ajax-Northrup's 36 years of induction experience can help you. Just write or call us.

---

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Ajax Park, Trenton 5, New Jersey

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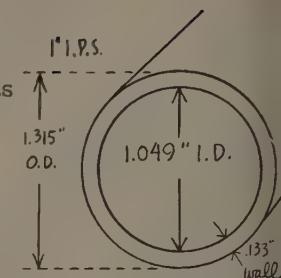


Since 1916

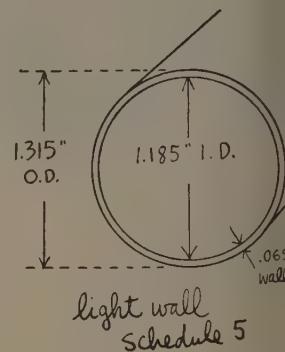
# Why pay for Schedule 40 pipe where Schedule 5 is more than adequate?



Back in the days when iron pipe was virtually the only kind available, it was necessary to specify this



But today with the high strength/weight ratio of stainless steel, the great majority of pipeline and process applications will have an ample margin of safety with this



All sizes of Carpenter Schedule 5 pipe will easily handle 150 psi working pressures. Sizes under 1½" will safely handle considerably higher pressures. By specifying this light wall stainless pipe you gain many advantages:

1. You save money. Schedule 5 pipe costs about half as much per foot as Schedule 40.
2. Schedule 5 has the same O.D. as Schedules 10, 40 and 80—for hook-up with existing lines as well as for new installations.
3. Its larger I.D. increases flow and capacity in pipelines, exchangers and other equipment.
4. It's lighter. This means quicker and easier installation.

5. You can save 10% to 25% on valves, fittings, weld rods, etc., because smaller O.D. material can frequently be used.

6. Fittings are available from several manufacturers . . . and stocks of Schedule 5 pipe are carried conveniently located Carpenter distributors.
7. Tubing sizes can now be replaced with light weight pipe . . . for ready hook-up with standard valves, pumps, etc.

Light wall Schedule 5 pipe saves dollars—it makes a lot of sense!

For complete data on Carpenter Schedule 5 Stainless Pipe, call your nearest Carpenter distributor or write us direct. We'll be glad to send you information you need. THE CARPENTER STEEL COMPANY, Alloy Tube Division, Union, N. J. Export Dept.: The Carpenter Steel Co., Port Washington, N.Y. "CARSTEEL"

# Carpenter



## STAINLESS TUBING & PIPE



- guaranteed on every shipment

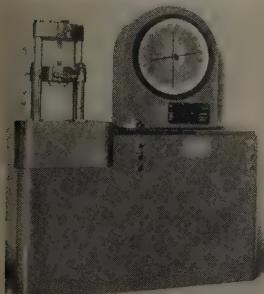


oval flutes, narrow lands and spiral carries dust up and out the hole as fast as it forms. Drills range from 11/64 to 1-inch spiral fluted drills and 1 1/8 to 2-inch for straight fluted drills. Club Industries Inc., Dept. ST, Camrose, Ill.

REPLY CARD—CIRCLE No. 10

### Universal Testing Machine • smaller models introduced

Universal testing machines in 10,000 and 12,000-pound capacity incorporate all features of the manufacturer's larger units. Clear space between columns is increased 15 inches. Machine has been built as a single unit. Separate framework for the gage panel prevents



lock of breaking specimens from being transmitted to the load indicator.

Both machines are available with either of two indicator types: The first has two 16-inch diameter Emery indicator dials; the second, a single Emery indicator with three triangles on a single 24-inch dial. Idwin - Lima - Hamilton Corp., Dept. ST, Philadelphia 42, Pa.

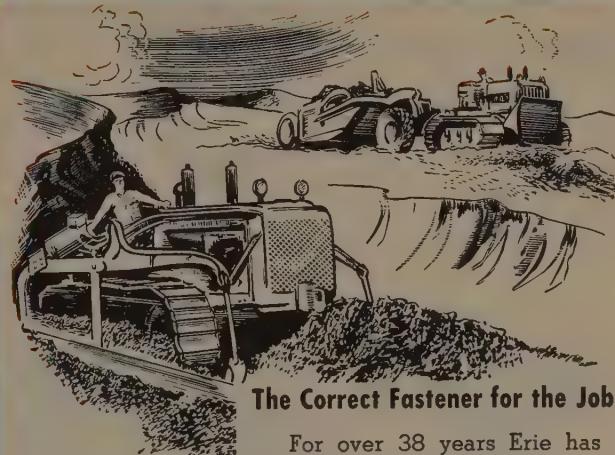
REPLY CARD—CIRCLE No. 11

### Dual-Purpose Exhaust

• supplies coolant, saves dust

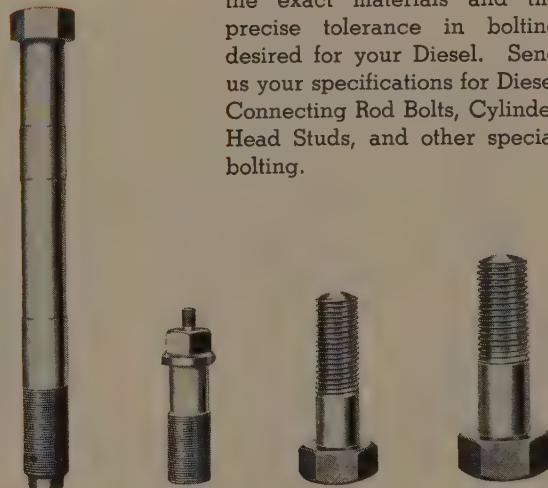
This dual-purpose exhausting machine first supplies coolant to the grinding wheel, then collects maximum amount of diamond dust for reclaiming. Accurately-controlled coolant flow is directed to the center of the grinding wheel, assuring an even distribution and increasing wheel life. All excess coolant is immediately sucked into a hood

## For DEPENDABILITY IN CONSTRUCTION EQUIPMENT



The Correct Fastener for the Job

For over 38 years Erie has manufactured bolts and studs to the specifications of Diesel Engine builders. This specialized experience gained in working with leading Diesel designing engineers assures you of getting the exact materials and the precise tolerance in bolting desired for your Diesel. Send us your specifications for Diesel Connecting Rod Bolts, Cylinder Head Studs, and other special bolting.



**ERIE BOLT and NUT CO.**  
ERIE • PENNSYLVANIA

STUDS • BOLTS • NUTS  
ALLOYS • STAINLESS  
CARBON • BRONZE

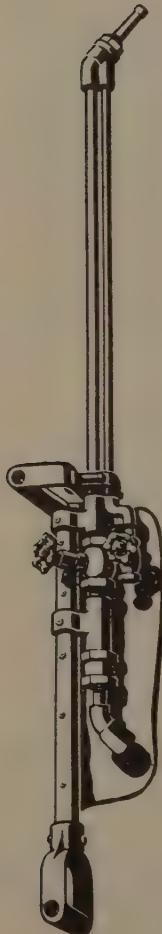
Representatives in Principal Cities.

HOW  
DO YOU CLEAN  
BIG METAL PARTS?

HOW DO YOU  
STRIP PAINT OFF  
THOSE LARGE  
STEEL SHEETS?

HOW DO YOU  
KEEP YOUR  
EQUIPMENT  
SO CLEAN?

I USE AN  
OAKITE STEAM GUN  
FOR ALL THE HARD JOBS.  
IT SAVES  
TIME AND MONEY



This happy man has found the answer to all the tough cleaning problems.

He knows the best way to clean metal parts that are too large to be soaked in tanks or conveyed through washing machines.

He knows the best way to strip paint from large parts and large surfaces that can't be soaked.

He knows the best way to clean large equipment such as:

- die casting machines
- wire drawing machines
- blooming mill rollers and cutters
- hoisting machinery
- brass reduction machines
- millers and grinders
- buffing machines
- forge hammer parts
- drill presses
- stamping machines
- motors

He knows his Oakite Steam Gun will do practically every cleaning job that's too big or too difficult to do by ordinary methods.

**FREE** For your copy of "Time saved with Oakite steam-detergent cleaning" write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING  
**OAKITE**  
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

easily attached and adjusted to correct position for grinding machine setup.

An auxiliary spray built into hood keeps exhaust hose and



flushed clean to insure efficient continuous operation. Collector pan located conveniently on the bottom of the machine for collecting sludge from which diamond dust can be reclaimed. Shelboerg Mfg. Co., Dept. ST, 29 Ridgeview Lane, Indianapolis, Ind.

USE REPLY CARD—CIRCLE NO. 12

### Controlled-Power Press

... continuous impact adjustment

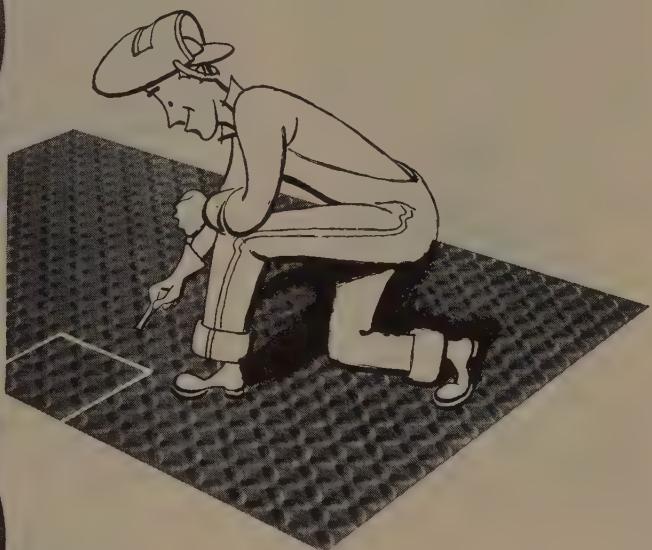
This bench-type air and spring-powered press is redesigned to provide high-speed operation, precise power control and a high degree of operator safety. The model R-1 provides continuous adjustability of impact from 0 to 12,000 pounds.



and of squeeze up to 12 times line pressure. Either a pedal release or two-hand safety release can be used.

When used with the air-operated slide feed, the operator's hands never approach the danger area.

You can cut and join this floor plate to any shape you need,  
And Multigrip will fabricate with utmost ease and speed;  
For Multigrip is so designed to make the sections match  
Placed end to end, or side to side, or in a side-end patch . . .  
The pattern that is formed will be the same from all directions,  
And Multigrip needs fewer joints for it comes in bigger sections!



**EASY FABRICATION.** The symmetrical pattern of U·S·S Multigrip Floor Plate allows neat, continuous installations and keeps cutting waste to a minimum. Available in long, wide sections, it reduces installation costs where large areas are to be covered.

Slip-proof Multigrip provides firm, sure footing for workers and positive traction for vehicles. The scientifically-designed risers feel comfortable underfoot . . . tend to lessen fatigue. The lozenge-shaped, evenly-spaced risers are at right angles to one another . . . form no pockets to catch dirt, grease and water, no gutters to trap vehicle wheels.

For entire factory floors or steps and platforms of machinery, for safety's sake use Multigrip, the non-skid, permanent floor plate.

UNITED STATES STEEL CORPORATION, PITTSBURGH  
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO  
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.  
UNITED STATES STEEL SUPPLY DIVISION, CHICAGO  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

**U·S·S**  
**multigrip**

**FLOOR PLATE**



*Sold by leading distributors from coast to coast*

UNITED STATES STEEL

3-65

Potential press speed is in excess of 100 strokes per minute. Absence of rebound makes the unit applicable for delicate marking operations. Winter Products Inc., Dept. ST, Box 3112 Barnum Station, Bridgeport 5, Conn.

USE REPLY CARD—CIRCLE No. 13

### Air Cartridge Unit

... for single, multiple gaging

This air cartridge unit can be used with the manufacturer's single and multiple-station fixture-



type gages in the same manner as dial indicators. Practical applications include checking such factors as squareness, height, con-

tour and concentricity. Internal and external average diameters can also be checked.

Unit consists of a plunger with a contact point on one end and a stainless steel ball on the other, operating with axial movement in the cartridge body. Contact of only 3 ounces is all that is required to operate the unit. Pratt & Whitney, division of Niles-Bement-Pond Co., Dept. ST, W. Hartford 1, Conn.

USE REPLY CARD—CIRCLE No. 14

### Direct Measuring Density Gage

... radioactivity is the key

Gage provides simple, direct method for measuring unusual process variables, where density is a function of measurement desired. Penetration power of radioactivity is employed to make possible measurements previously considered impractical or impossible.

Liquid level and interface liquid level, surface films, specific gravity, unit weight per unit area, gas or liquid composition are several of the variables that can be mea-

ured by this null system of measurement. Many installations can be made without need for connections to process piping or vessels.

Basis for gage is the Ohm cell, in which radioactive energy is converted directly into electrical energy, eliminating need for high voltage power supply. Ohm Corp., Dept. ST, 2347 Ferguson Rd., Cincinnati 38, O.

USE REPLY CARD—CIRCLE No. 15

### Redesigned Sprinkler Head

... effective discharge pattern

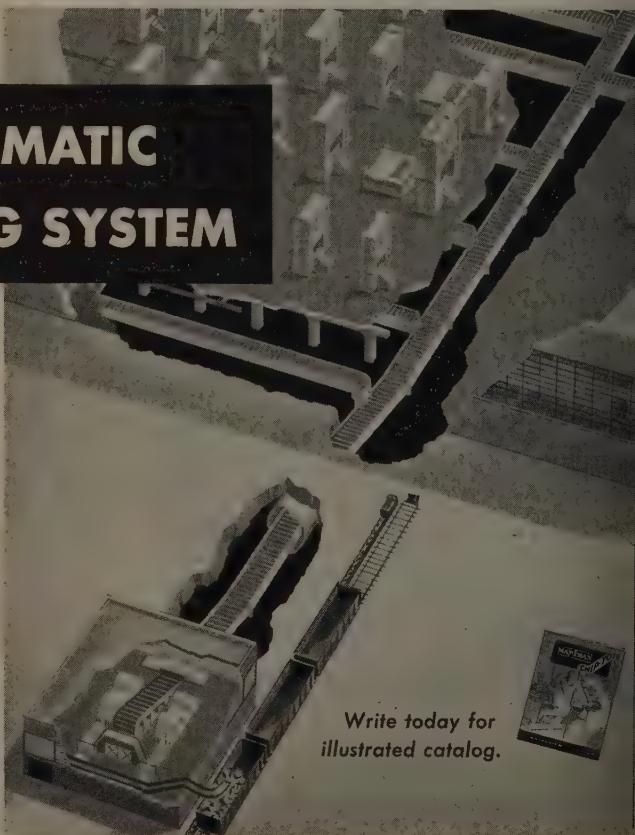
Sprinkler head is redesigned to provide an effective distribution pattern and water break-up at the desired rates of flow. Discharge pattern becomes solid, extending laterally and downward.

Device is available in two styles: Upright, for exposed piping installations; pendant for installations involving concealed piping. Discharge waterway and or-

## MAY-FRAN AUTOMATIC SCRAP HANDLING SYSTEM

**Solves scrap disposal problem  
for large automotive manufacturer**

World's largest automatic scrap handling system engineered by **MAY-FRAN** can handle one million pounds of scrap per day... one man controls all operations! Twenty conveyors collect scrap from presses... transfer it to the 1145-foot main conveyors... then scrap is conveyed to baler house where it is compressed into bales and discharged into automatically indexed freight cars on siding. Entire system is operated from a single control station.



Write today for  
illustrated catalog.

ing mechanisms are identical with previously approved springs. Modifications in design of frame and deflector are made only to gain more efficient use of water. Automatic Sprinkler Corp. of America, Dept. ST, Jones & Britton Sts., Youngstown, O.

USE REPLY CARD—CIRCLE No. 16

### Protective Coating

... for cold application

A sprayable, strippable coating, Spray-Strip, is capable of cold application by spray, brush or dip method. It is impervious to acids, alkalies, greases and oils and offers good protection against vapors and abrasion. Eagle Chemical Co., Dept ST, Industry Ave., Joliet, Ill.

USE REPLY CARD—CIRCLE No. 17

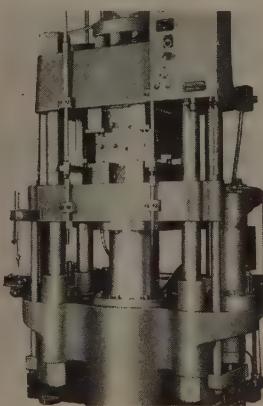
### Hydraulic Press Line

... new firm in field

Expansion of operations to include production of a hydraulic press line is reported by this manufacturer. Press features will in-

clude such factors as self-contained fast traverse, governed pressures, top or bottom transfer, with semi-automatic pressure controls.

Pressure range is from 200 to



400 tons. Logan Engineering Co., Dept. ST, 4901 W. Lawrence Ave., Chicago 30, Ill.

USE REPLY CARD—CIRCLE No. 18

### Electrode Holder

... gives cool operation

A 40-amp insulated electrode holder, the Cooltong, will handle

electrodes from  $\frac{1}{8}$  to  $\frac{5}{16}$ -inch in size and has a wide opening to permit fast release of stubs. The nose is a special sandwich construction consisting of a copper core between four and six layers of laminated, glass impregnated, plastic cloth. Lincoln Electric Co., Dept. ST, Cleveland 17, O.

USE REPLY CARD—CIRCLE No. 19

### Infrared Radiation Meter

... measures to 10w per sq. in.

This infrared meter measures radiant-energy intensities up to 10w per square inch. Called type



DW-69, the meter determines rapidly the intensity of high range, radiant-energy sources and is used

### Plant-wide system or Single unit

Whether you need a complete plant-wide system or a single scrap handling unit, **MAY-FRAN** can meet your requirements. Conveyors of any size can be supplied using the unique **MAY-FRAN** hinged-steel belting. Speed-up production . . . eliminate manual handling . . . reduce scrap handling costs with a **MAY-FRAN** system!

1057-MF

# MAY-FRAN

## ENGINEERING, INCORPORATED

1725 CLARKSTONE ROAD

CLEVELAND 12, OHIO

for studies of infrared radiation effects concerning material absorption and transmission property

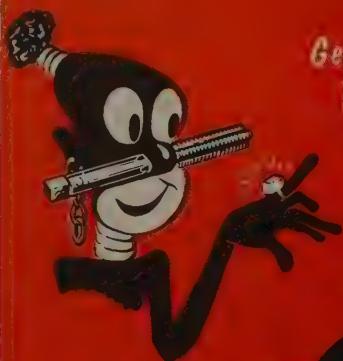
Typical applications for pocket-size meter include elimination of drying-lamp field distribution and aiding quality control of products that require infrared processing. No separate thermopile or other accessory equipment needed. General Electric Co., Dept. ST, Schenectady 5, N. Y.

USE REPLY CARD—CIRCLE No. 20



## Want to know the facts of life?

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Threadwell's brand new  
56 page Tap Manual  
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It's a real humdinger!

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THREADWELL TAP & DIE CO., GREENFIELD, MASS.

### Pedestal Tool Grinder

... keyed to operating ease

Plenty of room around the grinding wheels, operation with almost no vibration and good dust protection are design characteristics of this pedestal tool grinder. U



is built with 8-inch grinding wheels and 1/2-hp motor, or with 10-inch wheels and 3/4-hp motor.

Motor is mounted in the pedestal providing easier movement by operator around each grinding wheel and gaining protection of the motor from abrasive dust. Wheel spindle runs on sealed ball bearings. These combine with a fully-enclosed V-belt drive to produce a vibration-free running

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Just circle the corresponding number of any item in this section for more information.

*Yours*

# FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

## Corrosionproof Linings

S. Stoneware Co.—Physical properties, physical properties, and how where to apply Tygon corrosion resistant linings are discussed in a pictorial manner in 12-page illustrated bulletin TL-526. Tables list resistance of this coating to various chemicals. Methods of preparation, application, maintenance and repair of mechanical damage are presented.

## Savings with Platecoils

Hold-Hold Mfg. Co.—20-page brochure shows "How Platecoils Replaced Pipe Coils at a Savings Throughout Industry." Among reasons for savings are low initial cost, up to 50 per cent faster heating and cooling and low space requirements.

## Wet Blast Finishing

American Wheelabrator & Equipment Corp.—Die and mold finishing, maintenance, tool finishing and various heat treatment scale removal and surface preparation foring are some of the applications wet blasting which are described in 6-page illustrated bulletin 13.

## Magnesium Finishing

Low Chemical Co., Magnesium—128-page illustrated revised manual "Magnesium Finishing" has detailed descriptions of surface finishing and treatment, including mechanical finishing, chemical treatments, electroplating, painting and anodizing protection. Alloy die cast sand and permanent mold castings and sheet, plate and extrusions covered.

## Overhead Handling

American Monorail Co.—12-page illustrated bulletin AD-1 is devoted to the applications, construction and operation of automatic dispatch systems composed of MonoRail track systems, automatically controlled

Monotractor, electric hoist, load carrying accessories and station selectors. Loads are picked up, carried and discharged automatically.

## 74. Spring Steel

Lapham Hickey Co.—8-page illustrated "Stock List" covers complete line of tempered and annealed spring steel. Prices, weights and sizes are given on blue tempered and polished black oil tempered, feeler gage, cold rolled annealed, with hot rolled floor annealed spring steel stock.

## 75. Electric Pallet Truck

Automatic Transportation Co.—The new Transveyor line of riding-type pallet trucks is covered in 4-page illustrated bulletin EPE-4. Designed for close-quarter, arrow-aisle operation, this electric powered unit is rated 4000 lb with 48-in. long loads.

## 76. Spintesting Units

Warren Brothers Roads Co., Mfg. Div.—Vacuum high speed testing unit for testing rotating parts at speeds up to and even exceeding 100,000 rpm is subject of descriptive 4-page bulletin. Parts most commonly spintested are fan impellers, turbine rotors, compressor rotors, accessory turbines and gyros.

## 77. Products & Services

Now in its third edition, illustrated book "Products and Services of American Cyanamid Co. for Industry and Agriculture" contains a listing and description of products and services available to these fields.

## 78. Shapers

Cincinnati Shaper Co.—36-page illustrated catalog N-5 on Cincinnati shapers gives data on 25 machine tools in ten sizes and five types of any capacity for practically any service. Special equipment for obtaining peak production with these tools is detailed. Also mentioned briefly are All-Steel shears and press brakes.

2-16-53

STEEL

Penton Building, Cleveland 13, Ohio

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3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
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9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

**STEEL**

Penton Building, Cleveland 13, Ohio

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**79. Grinders & Grinders**

Besly-Welles Corp.—Disk, double spindle, radial head face and other grinding machines and accessories as well as Besly-Titan abrasive disks and wheels in 6 to 72-in. diameters are described thoroughly in 80-page illustrated 1953 catalog. Production machines for the generation of flat surfaces are covered.

**80. Flexible Hose Tubing**

American Brass Co.—16-page illustrated "quick reference" catalog, designated as CC-400, describes American flexible metal hose and tubing. Seamless and strip wound types described are available in a wide range of alloys and sizes. Application and fittings data are included.

**81. Pickling & Heat Treating**

Clark E. Gordon, Inc.—Practically any cast, extruded, forged or fabricated product that requires pickling or heat treating can be handled by Clagor equipment that is described in 12-page illustrated catalog.

**82. Bushings & Bushings, etc.**

Acme Industrial Co.—If you're looking for data on drill jig bushings, dowel pins and liner and leader pins and bushings by all means send for 24-page illustrated catalog No. 10-6/52. Printed in easy-to-follow form, it features ASA and Acme standards, for a complete range of types and sizes.

**83. Vibration Control**

Felters Co.—"Why It Pays to Anchor Your Machines with Unisorb" is 20-page illustrated booklet on machine anchoring material which controls transmitted vibration and noise. Covered are installation materials, system's advantages and application to various machines, including lathes.

**84. Center-Break Switches**

Delta-Star Electric Co.—High pressure contacts with independently sprung contact shoes are incorporated in PMK-22 and PMK-23 horizontal center-break switches, described and illustrated in publication 5205. Drawings, diagrams and tables for the upright and/or inverted mounting switches are included.

**85. Gas Burners**

Selas Corp. of America—Multiport flame type gas burners for use in heat processing such as high temperature brazing; glass fire polishing;

heating solder pots, ovens and molds; soldering; baking; tempering and hardening are the subject of page illustrated bulletin SC-1. Burner capacities range up to 64 Btu per hr.

**86. Explosionproof Motors**

Louis Allis Co. Line of explosion proof motors is described in illustrated 12-page bulletin 800. Special built-in features, typical uses and many of the various electrical mechanical modifications are shown.

**EDITORIAL  
REPRINTS:****87. Raising Castings Output**

With squeezer machines moving both halves of the mold at the same time plus a few other changes in their facilities, Baldwin-Lima-Hamilton Corp. stepped up its deliveries of small and medium-sized castings 30 per cent. The illustrated story in STEEL reprint "Foundry Facilities Molded to Production."

**88. Continuous Forging**

Coordinated American and British design work is paying off for T. E. Bros. & Co. Ltd., of England. It is producing 24 to 50-in. diameter railway wheels at a continuous rate of 60 pieces per hour from a single heat remote-controlled process. Out of the plant, plus the full story, is contained in STEEL reprint "Continuous Forge Rolls Up Wheel Orders."

**89. Nondestructive Testing**

Intelligent industrial management doesn't employ any process unless it pays more than its way. In STEEL reprint "Testing Brightens Picture" W. E. Thomas, Magnecor Corp. Vice President, gives the economic justification for nondestructive testing and shows value of its operations in boosting earnings.

**90. Conveyor Ups Press Output**

"Conveyor Boosts Press Output" is title of STEEL reprint by L. Boarts and E. Searcy which relates how North American Aviation Inc. increased by 48 per cent production of one of their rubber forming presses by synchronizing a conveyor into the press cycle. It is a 2000-ton Birdsboro three-cylinder hydraulic built by Convair.

dition. Two concealed lamps in each shield provide ample light. South Bend Lathe Works, Dept. T, 425 E. Madison St., South Bend 22, Ind.

REPLY CARD—CIRCLE No. 21

### Heavy-Duty Pneumatic Drill

... continuous maximum power

  
Lightweight, compact model PD-304P pneumatic drill is specifically constructed for heavy-duty operation with maximum power on continuous runs. Contoured pistol grip, trigger throttle and built-in speed regulator combines for easy handling. Model has its own built-in oiler and parts move on precision ball bearings.

The drill weighs 3 pounds, is 13-3/32 inches long, 2-1/16 inches wide and 6-1/2 inches high. It comes with 1/4-inch Jacobs chuck, key, wrench, hydraulic fitting, 1/4 x 8-inch air hose and lubricant. Mall Tool Co., Dept. ST, 7725 S. Chicago Ave., Chicago 19, Ill.

REPLY CARD—CIRCLE No. 22

### Low-Temperature Testers

... range: -10 to -70°F

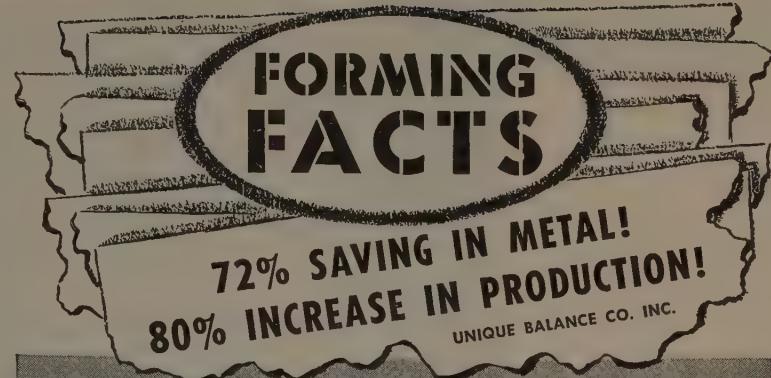
Practical low-temperature testing for any size laboratory or test department is the function of the V-70 series industrial chilling machines. Units will hold any temperature from -10 to -70°F. Thermal capacity is 500 Btu per hour. Motor compressor is hermetically sealed.

Model is available in chamber sizes from 5 to 1.5 cu ft. Chamber all is 3/16-inch steel and counterbalanced lid is employed. Sub-Zero Products Co., Dept. ST, 3930 Reading Rd., Cincinnati 29, O.

REPLY CARD—CIRCLE No. 23

  
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## Typical results by every user of **NILSON 4-SLIDE** Wire and Ribbon Metal FORMING MACHINES

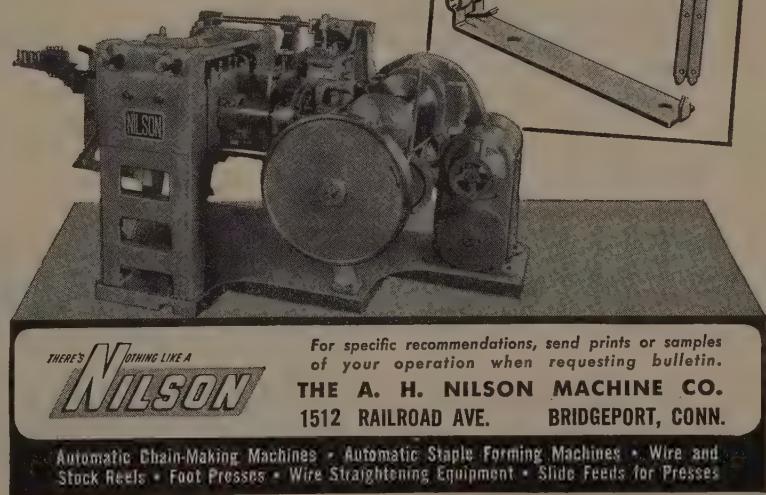
Plants from coast-to-coast are setting new production records with **NILSON 4-SLIDE MACHINES** . . . and experiencing tremendous economies and greatly improved quality.

Are you confronted with a keen competitive situation? Take the advice of hundreds of plant supervisors . . . install **NILSON MACHINES** and enjoy these economies at once.

**NILSON** combination press and 4-SLIDE forming machines take the stock directly from the coil—feed, straighten, pierce, blank, swage, stamp, coin—perform up to 5 forming operations and cut off . . . all in one quick, precise operation AUTOMATICALLY!

#### USING A NILSON COMBINATION PRESS AND 4-SLIDE FORMING MACHINE

Unique Balance Co., Inc. (one of the largest manufacturers of sash balance equipment), now produces 71,532 more parts out of the same amount of steel, compared to their former method. Production speeds increased from 100 to 180 pieces per minute.



**THE A. H. NILSON MACHINE CO.**  
1512 RAILROAD AVE. BRIDGEPORT, CONN.

For specific recommendations, send prints or samples of your operation when requesting bulletin.

Automatic Chain-Making Machines • Automatic Staple Forming Machines • Wire and Stock Reels • Foot Presses • Wire Straightening Equipment • Slide Feeds for Presses



## FEDDERS ROOM AIR-CONDITIONERS GET LASTING ENAMEL ADHERENCE

... and adherence of baked synthetic enamel finishes is extremely important to Fedders-Quigan Corporation, Buffalo, New York, manufacturers of Room Air Conditioners.

Parts of these units are often subjected to a constant flow of moist and humid air. Approximately 50 percent of the shell is exposed to the atmosphere. Because of high vulnerability to rust and corrosion, it is essential that the exposed surfaces not only "take" but also tenaciously *hold* the attractive finishes that are applied.

For these reasons, Republic Electro Paintlok is used for the shell, mounting brackets, fan shrouds,

bulkheads and covers of the Fedders Room Air Conditioners.

Republic Electro Paintlok facilitates manufacturing operations, too. The tight zinc coating will not crack, peel or flake during normal fabrication. Special chemical treatment gives the zinc coating an inert, non-metallic surface which is absorbent in character; a prime condition for painting.

Get the full story of product improvement with Electro Paintlok. Write for the colorfully detailed Republic Booklet 525. Address:

**REPUBLIC STEEL CORPORATION**  
GENERAL OFFICES • CLEVELAND 1, OHIO  
Export Dept.: Chrysler Building, New York 17, New York

*Republic*  
**ELECTRO ZINC PLATED SHEETS**  
Electro Paintlok • Electro Zincbond



Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire

WHEN you wonder why steel demand continues so strong, look at the automobile industry.

The nation's biggest consumer of finished steel (it uses one-fifth of the output), the U. S. auto industry is aiming to produce 486,000 passenger cars in February, a short month. In the long month of January, the output was only 465,745 units. The February projection even tops the 1952 high of 479,938 in October.

Such an ambitious projection takes a lot of steel.

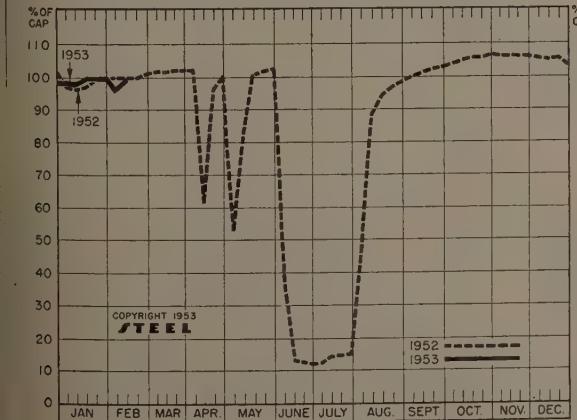
**NEAR A PLATEAU**—The pressure of demand for automotive steel should level out, however, this month, for auto production should have attained its full stride. In preparation for this production push, the auto industry had been intensifying its demand for steel.

Helping soften the blow of this intense demand from the auto industry is the growing steel production, made possible by the expansion in steelmaking capacity. In January, more raw steel was produced than in any previous month, the American Iron & Steel Institute reports. Output was 9,888,000 net tons of steel for ingots and castings. That is equivalent to an annual production of 116.4 million net tons. Record for annual output was 105.2 million tons in 1951. In setting the new monthly record, the industry's steelmaking furnaces operated at an average of 99 per cent of capacity.

**FAST PACE**—High steel production is continuing. In the week ended Feb. 14, steelmaking furnaces were operated at 99.5 per cent of capacity. This is a 2-point recovery from the preceding week when a five-day strike hit a Chicago district steel producer. Though it was brief, that strike was costly to users of bars for civilian purposes. Of all products, bar rolling schedules were hit hardest. Customers for some sizes of bars have been notified delivery dates must be delayed a month.

**TIGHT SQUEEZE**—The heavy demand the auto industry is exerting for steel is putting a tight squeeze on the sheet supply. With sheet demand far ex-

## NATIONAL STEELWORKS OPERATIONS



## DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

Percentage of Workers Engaged at Leading Production Points				
	Week Ended Feb. 14	Change	Same Week	1952 1951
Pittsburgh	106	0*	101.5	99.5
Chicago	101†	+ 9*	101.5	101
Mid-Atlantic	97†	0	99	99.5
Youngstown	106	0	102	106
Wheeling	100.5†	+ 5	99	97
Cleveland	103†	- 5*	97.5	86.5
Buffalo	106.5	+ 5	104	104
Birmingham	97†	- 1	104	104
New England	85†	- 4	88	90
Cincinnati	93	0	89	102
St. Louis	93.5	- 12	77.5	95
Detroit	100.5	- 1	101.5	108
Western	109	- 1	104	100.5
Estimated national	99.5	- 2	100	99

\*Change from preceding week's revised rate.

†Estimated rates are based on Jan. 1, 1953, capacities; others, on Jan. 1, 1952, capacities. Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,900,924 tons in 1951.

## Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics (1947-1949=100)	Feb. 10	Feb. 3	Month Ago	January Average
130.5	130.6	130.7	130.7	

## AVERAGE PRICES (BUREAU OF LABOR STATISTICS) Week Ended Feb. 10, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	\$3.775	Sheets, C.R. carbon	\$5.275
Tracks, spikes	6.650	Sheets, galv.	6.845
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb.)	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft.)	7.090
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft.)	8.778
Structural shapes	4.200	Boiler tubes (100 ft.)	31.663
Bars, tool steel (lb.)	1.578	Tin plate (100 lb. base box)	8.950
Bars, 3120 alloy	6.575	Tin plate (100 lb. base box)	7.750
Bars, stainless (lb.)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.425
Bars, reinforcing	4.050	Nails (100 lb. kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.880
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.629

## FINISHED PRICE INDEX, Weighted:

Calculated by STEEL*	Feb. 12	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
	1953	181.31	181.31	181.31	171.92
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	134.56
Index in cents per lb.	4.912	4.912	4.912	4.657	3.645

## ARITHMETICAL PRICE COMPOSITES:

## Calculated by STEEL\*

Finished Steel Std.	\$110.98	\$110.98	\$110.98	\$106.32	\$78.59
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.24	39.69
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	39.219
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	40.30
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	40.58

\* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

## Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Feb. 12	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.223	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.988
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Clayton, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-8.50	5.10-8.50	5.10-8.50	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.71
Wire, Basic, Pitts.	5.475-5.225	5.475-5.225	5.475-5.225	4.85-5.10	3.775
Nails, Wire, Pittsburgh	6.35	6.35	6.35	5.90-6.20	4.70
Tin plate box, Pittsburgh	\$8.95	\$8.95	\$8.95	\$8.70	\$6.70

## SEMITRANSHED

Bullets, forging, Pitts. (NT)	\$70.50	\$70.50	\$70.50	\$66.00	\$56.50
Wire rods, $\frac{7}{8}$ - $\frac{3}{4}$ ", Pitts.	4.425	4.425	4.425	4.10-30	3.175

## PIG IRON, Gross Ton

Bessemer, Pitts.	\$55.50	\$55.50	\$55.50	\$53.00	\$40.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	40.74
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Elma, Pa.	228.00	228.00	228.00	188.00	151.00*

\* F.O.B. cars, Pittsburgh.

## SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	\$44.00	\$44.00	\$44.00	\$44.00	\$40.50
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	42.50	42.00
No. 1 Heavy Melt, Cleago.	42.50	42.50	42.50	42.50	39.25
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	44.00	40.25
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	43.00	39.75
No. 1 Heavy Melt, Buffalo	43.00	43.00	43.00	43.00	43.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	54.75
No. 1 Cast, Chicago	43.00	43.00	43.00	49.00	66.00

\* F.O.B. shipping point.

## COKE, Net Ton

Beehive, Furn., Connslv.	\$14.75	\$14.75	\$14.75	\$14.75	\$12.00-13.00
Beehive, Fdry., Connslv.	17.00	17.00	17.00	17.50	14.00-15.50
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	18.00

## PIG IRON

F.o.b. furnace prices quoted under GCFR as reported to ST. Minimum delivered prices are approximate and do not include 3% general tax. Key to producing companies published on second following page.

## PIG IRON, Gross Ton

Bethlehem, Pa. B2 ..... \$56.50 \$57.00 \$57.50 \$58

New York, del. ..... 60.78 61.28 61.28 60

Philadelphia, del. ..... 59.52 60.02 60.52 61

Birmingham District

Alabama City, Ala. R2 ..... 50.88 51.38 51.38 50

Birmingham R2 ..... 50.88 51.38 51.38 50

Birmingham S9 ..... 50.88 51.38 51.38 50

Woodward, Ala. W15 ..... 50.88 51.38 51.38 50

Cincinnati, del. ..... 58.93 59.92 59.92 59

Buffalo District

Buffalo R2 ..... 54.50 55.00 55.50 55

Buffalo H1 ..... 54.50 55.00 55.50 55

Tonawanda, N.Y. W12 ..... 54.50 55.00 55.50 55

No. Tonawanda, N.Y. T9 ..... 54.50 55.00 55.50 55

Boston, del. ..... 65.15 66.15 66.15 65

Rochester, N.Y., del. ..... 57.52 58.02 58.52 58

Syracuse, N.Y., del. ..... 58.62 59.12 59.12 59

Cleveland District

Cleveland I-3 ..... 54.50 55.00 55.50 55

Gary, Ind. U5 ..... 54.50 55.00 55.50 55

Indiana Harbor, Ind. I-2 ..... 54.50 55.00 55.50 55

So. Chicago, Ill. W14 ..... 54.50 55.00 55.50 55

So. Chicago, Ill. Y1 ..... 54.50 55.00 55.50 55

So. Chicago, Ill. U5 ..... 54.50 55.00 55.50 55

Milwaukee, del. ..... 56.67 57.17 57.17 57

Muskegon, Mich., del. ..... 56.67 61.30 61.30 60

Cleveland District

Cleveland A7 ..... 54.50 55.00 55.50 55

Cleveland R2 ..... 54.50 55.00 55.50 55

Akron, O., del. from Cleve. ..... 57.11 57.61 57.61 58

Lorain, O., N3 ..... 54.50 55.00 55.50 55

Duluth, I-3 ..... 54.50 55.00 55.50 55

Erie, Pa. I-3 ..... 54.50 55.00 55.50 55

Everett, Mass. E1 ..... 54.50 55.00 55.50 55

Fontana, Calif. K1 ..... 60.50 61.00 61.00 60

Granite City, Ill. G4 ..... 56.40 56.90 56.90 56

St. Louis, del. (inc. tax) ..... 57.15 57.65 57.65 57

Ironon, Utah C11 ..... 54.50 55.00 55.50 55

Geneva, Utah C11 ..... 54.50 55.00 55.50 55

LoneStar, Tex. L6 ..... 50.50 51.00 51.00 50

Minnequa, Colo. C10 ..... 56.50 57.50 57.50 57

Rockwood, Tenn. T3 ..... 56.50 57.50 57.50 57

Pittsburgh District

Neville Island, Pa. P6 ..... 55.00 55.00 55.00 55

Pitts., N.S. sides, Ambridge ..... 55.00 55.00 55.00 55

Alquippa, del. ..... 56.37 56.87 56.87 56

McKees Rocks, del. ..... 56.04 56.04 56.04 56

Lawrenceville, Homestead, Wilmersding, Monaca, del. ..... 56.66 56.66 56.66 56

Verona, Trafford, del. ..... 57.19 57.19 57.19 57

Brackenridge, del. ..... 57.45 57.45 57.45 57

Bessemer, Pa. U5 ..... 54.50 55.00 55.00 55

Clairton, Rankin, So. Duquesne, Pa. U5 ..... 54.50 55.00 55.00 55

McKeesport, Pa. N3 ..... 54.50 55.00 55.00 55

Monessen, Pa. P7 ..... 56.50 57.00 57.00 57

Sharpsville, Pa. S6 ..... 56.50 57.00 57.00 57

Steelton, Pa. B2 ..... 56.50 57.00 57.00 57

Swedland, Pa. A3 ..... 56.50 59.00 59.00 59

Toledo, O. I-3 ..... 54.50 55.00 55.00 55

Cincinnati, del. ..... 58.97 60.47 60.47 60

Troy, N.Y. R2 ..... 56.50 57.00 57.00 57

Youngstown District

Hubbard, O. Y1 ..... 54.50 55.00 55.00 55

Youngstown, O. Y1 ..... 54.50 55.00 55.00 55

Youngstown U5 ..... 54.50 55.00 55.00 55

Mansfield, O., del. ..... 59.15 59.65 59.65 59

\* Low phos, southern grade.

## PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage the over base grade, 1.75-2.25%, except on low phos iron on which is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and manganese: Add 50 cents per ton for each 0.50% manganese over or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add \$2 per ton each additional 0.25%, add \$1 per ton.

## BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add \$1.50 for each 0.5% Si)

Jackson, O. G2 J1 ..... \$</p

## Semifinished and Finished Steel Products

Mill prices quoted under GCPM, as reported to STEEL, Feb. 12, 1952, cents per pound except as otherwise noted. Changes shown in italics. Grade numbers following mill points indicate producing company; key on next two pages.

<b>SHEETS, Cold-Rolled Steel (Commercial Quality)</b>	<b>BLACK PLATE (Base Box)</b>	<b>MANUFACTURING TERNES</b>	<b>N.Tonawanda, N.Y.</b>
Butler, Pa. A10 .....	4.575	Alquippa, Pa. J5 .....	\$6.25
Cleveland, J5, R2 .....	4.575	Fairfield, Ala. T2 .....	6.60
Ecorse, Mich. G5 .....	4.775	Gary, Ind. U5 .....	6.50
Fairfield, Ala. T2 .....	4.575	Gary, Ind. U5 .....	6.70
Follansbee, W.Va. F4 .....	5.575	GraniteCity, Ill. G4 .....	6.70
Fontana, Calif. K1 .....	5.675	Ind. Harbor, Ind. I-2, Y1 .....	6.50
Gary, Ind. U5 .....	4.575	Irvin, Pa. U5 .....	6.50
GraniteCity, Ill. G4 .....	5.275	Niles, O. R2 .....	6.50
Ind. Harbor, Ind. I-2, Y1 .....	4.575	Pittsburg, Calif. C11 .....	7.25
Irvin, Pa. U5 .....	4.575	SparrowsPoint, Md. B2 .....	6.60
Lackawanna, N.Y. B2 .....	4.575	Warren, O. R2 .....	6.50
Middleton, O. A10 .....	4.575	Weirton, W.Va. W6 .....	6.50
Pittsburg, Calif. C11 .....	5.525	Yorkville, O. W10 .....	6.50
<b>HOLLOWARE ENAMELING</b>		<b>SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)</b>	
SparsrowsPoint, Md. B2 .....	4.575	BeachBottom, W.Va. W10 .....	5.475
Follansbee, W.Va. F4 .....	6.10	Gary, Ind. U5 .....	5.475
Steubenville, O. W10 .....	4.575	Mansfield, O. E6 .....	6.05
Warren, O. R2 .....	4.575	Middleton, O. A10 .....	5.475
Weirton, W.Va. W6 .....	4.575	Niles, O. N12 .....	6.275
WestLuechburg, Pa. A4 .....	4.545	Weirton, W.Va. W6 .....	5.475
Youngstown, Y1 .....	4.575	<b>SHEETS, Long Terne, Ingot Iron</b>	
<b>SHEETS, Galv'd No. 10 Steel</b>		Middleton, O. A10 .....	5.875
AlabamaCity, Ala. R2 .....	5.075	<b>ROOFING SHORT TERNES</b>	
Ashland, Ky. (8) A10 .....	5.075	Gary, Ind. U5 .....	9.75
Canton, O. R2 .....	5.075	<b>STRIP, Hot-Rolled Alloy</b>	
Delphos, O. N16 .....	5.675	Ashtabula, O. T2 .....	5.65
Dover, O. R1 .....	5.775	Conshohocken, Pa. A3 .....	5.90
Fairfield, Ala. T2 .....	5.075	Ecorse, Mich. G5 .....	6.30
Gary, Ind. U5 .....	5.075	Fairfield, Ala. T2 .....	5.65
GraniteCity, Ill. G4 .....	5.50	Fontana, Calif. K1 .....	6.55
Ind. Harbor, Ind. I-2 .....	5.075	Gary, Ind. U5 .....	5.85
Irvin, Pa. U5 .....	5.075	Dearborn, Mich. D3 .....	6.05
Kokomo, Ind. (13) C16 .....	5.475	Detroit, O. M1 .....	5.60
Kokomo, Ind. (13) C16 .....	5.475	Ind. Harbor, Ind. I-2 .....	5.65
MartinsFerry, O. W10 .....	5.075	Detroit M1 .....	5.45
Niles, O. N12 .....	6.275	Dover, O. (40) G6 .....	5.50
Pittsburg, Calif. C11 .....	5.825	Ecorse, Mich. G5 .....	5.30
SparsrowsPoint, Md. B2 .....	5.075	Follansbee, W.Va. F4 .....	5.10
Steubenville, O. W10 .....	5.075	Fontana, Calif. K1 .....	6.75
Torrance, Calif. C11 .....	5.825	So. SanFrancisco (25) B3 .....	6.40
Weirton, W.Va. W6 .....	5.075	SparsrowsPoint, Md. B2 .....	5.70
<b>SHEETS, Galvanized No. 10, High-Strength Low-Alloy</b>		Warren, O. R2 .....	5.65
Irvin, Pa. U5 .....	7.625	Weirton, W.Va. W6 .....	6.10
SparsrowsPoint (39) B2 .....	7.775	Youngstown, Y1 .....	6.15
<b>SHEETS, Galvanized Steel</b>		Middleton, O. A10 .....	5.65
Canton, O. R2 .....	5.625	<b>STRIP, Cold-Rolled Carbon</b>	
Irvin, Pa. U5 .....	5.625	Anderson, Ind. (40) G6 .....	5.50
Kokomo, Ind. (13) C16 .....	6.025	Bridgeport, Conn. (10) S15 .....	5.80
Niles, O. N12 .....	6.825	Butler, Pa. A10 .....	5.10
<b>SHEETS, ZINCGRIP Steel No. 10</b>		Fairfield, Ala. T2 .....	5.65
Butler, Pa. A10 .....	5.325	Fontana, Calif. K1 .....	6.55
Middleton, O. A10 .....	5.325	Gary, Ind. U5 .....	5.85
<b>SHEETS, Electro Galvanized</b>		Dearborn, Mich. D3 .....	6.05
Cleveland, R2 (28) .....	5.925	Detroit 2D .....	5.60
Niles, O. R2 (28) .....	5.925	Detroit M1 .....	5.45
Weirton, W.Va. W6 .....	5.775	Dover, O. (40) G6 .....	5.50
<b>SHEETS, Well Casing</b>		Ecorse, Mich. G5 .....	5.30
Fontana, Calif. K1 .....	5.34	Follansbee, W.Va. F4 .....	5.10
<b>BLUED Stock, 29 ga.</b>		Fontana, Calif. K1 .....	6.75
Yorkville, O. W10 .....	7.00	So. SanFrancisco (25) B3 .....	6.40
Follansbee (23) F4 .....	6.425	SparsrowsPoint, Md. B2 .....	5.70
<b>SHEETS, Enameling Iron</b>		Warren, O. R2 .....	5.65
Ashland, Ky. (8) A10 .....	4.925	Weirton, W.Va. W6 .....	6.10
Cleveland R2 .....	4.925	Youngstown, Y1 .....	6.15
Gary, Ind. U5 .....	4.925	Middleton, O. A10 .....	5.625
GraniteCity, Ill. G4 .....	5.625	NewBritain (10) S15 .....	5.80
Ind. Harbor, Ind. I-2 .....	4.925	<b>STRIP, Cold-Rolled</b>	
Irvin, Pa. U5 .....	4.925	Cleveland J5 .....	7.45
Middleton, O. A10 .....	4.925	Cleveland A7 .....	7.30
<b>SHEETS, ZINCGRIP Ingot Iron</b>		Dover, O. (40) G6 .....	8.00
Butler, Pa. A10 .....	5.575	Ecorse, Mich. G5 .....	8.15
Warren, O. R2 .....	5.175	Lackawanna, N.Y. B2 .....	7.90
<b>SHEETS, Galvanized Ingot Iron</b>		Sharon, Pa. S3 .....	7.30
No. 10 flat		SparrowsPoint, Md. B2 .....	7.90
Ashland, Ky. (8) A10 .....	5.325	Warren, O. R2 .....	7.30
Canton, O. R2 .....	5.825	Weirton, W.Va. W6 .....	7.95
Warren, O. R2 .....	4.375	Youngstown, Y1 .....	7.80
<b>SHEETS, Cold-Rolled Ingot Iron</b>		<b>STRIP, Cold-Rolled</b>	
Butler, Pa. A10 .....	5.075	Cleveland J5 .....	7.45
Cleveland R2 .....	5.175	Cleveland A7 .....	7.30
Middleton, O. A10 .....	5.075	Dover, O. (40) G6 .....	8.00
Warren, O. R2 .....	5.175	Ecorse, Mich. G5 .....	8.15
<b>SHEETS, ZINCGRIP Ingot Iron</b>		Lackawanna, N.Y. B2 .....	7.90
Butler, Pa. A10 .....	5.575	Sharon, Pa. S3 .....	7.30
Middleton, O. A10 .....	5.575	SparrowsPoint, Md. B2 .....	7.90
<b>SHEETS, Galvanized Ingot Iron</b>		Warren, O. R2 .....	7.30
No. 10 flat		Detroit 2D .....	6.45
Ashland, Ky. (8) A10 .....	5.325	Detroit P2 .....	5.70
Canton, O. R2 .....	5.825	Dover, O. (40) G6 .....	7.05
Warren, O. R2 .....	4.375	FranklinPark, Ill. T6 .....	5.45
<b>SHEETS, ZINCGRIP Ingot Iron</b>		Middleton, O. A10 .....	5.625
Butler, Pa. A10 .....	5.575	NewBritain (10) S15 .....	5.80
<b>SHEETS, ALUMINIZED</b>		<b>STRIP, Cold-Finished, Spring Steel (Annealed)</b>	
Butler, Pa. A10 .....	8.425	Cleveland J5 .....	0.26
<b>TIN PLATE, American 1.25 1.50</b>		Cleveland A7 .....	0.41
Coke (Base Box) lb	lb	Dover, O. (40) G6 .....	0.40C
Alquippa, Pa. J5 .....	\$5.870	Spring Steel (Annealed) 0.40C	0.60C
Fairfield, Ala. T2 .....	8.80	Spring Steel (Annealed) 0.60C	0.80C
Gary, Ind. U5 .....	8.70	Spring Steel (Annealed) 0.80C	1.05C
GraniteCity, Ill. G4 .....	7.80	Spring Steel (Annealed) 1.05C	1.35C
IndianaHarbor, Ind. I-2, Y1 .....	7.40	Spring Steel (Annealed) 1.35C	1.75C
Irvin, Pa. U5 .....	7.40	Spring Steel (Annealed) 1.75C	2.15C
Niles, O. R2 .....	7.40	Spring Steel (Annealed) 2.15C	2.55C
Pittsburg, Calif. C11 .....	8.15	Spring Steel (Annealed) 2.55C	3.15C
SparsrowsPoint, Md. B2 .....	7.50	Spring Steel (Annealed) 3.15C	3.75C
Weirton, W.Va. W6 .....	7.40	Spring Steel (Annealed) 3.75C	4.35C
Yorkville, O. W10 .....	7.40	Spring Steel (Annealed) 4.35C	5.00C
<b>TIN PLATE, Electrolytic (Base Box)</b>		<b>STRIP, Hot-Rolled Carbon</b>	
0.25 lb	0.50 lb	0.75 lb	1.00 lb
\$7.40	\$7.65	\$8.05	\$8.50
Fairfield, Ala. T2 .....	7.50	Spring Steel (Annealed) 0.26	0.40C
Gary, Ind. U5 .....	7.40	Spring Steel (Annealed) 0.40C	0.60C
GraniteCity, Ill. G4 .....	7.80	Spring Steel (Annealed) 0.60C	0.80C
IndianaHarbor, Ind. I-2 .....	7.55	Spring Steel (Annealed) 0.80C	1.05C
Irvin, Pa. U5 .....	7.85	Spring Steel (Annealed) 1.05C	1.35C
Niles, O. R2 .....	7.40	Spring Steel (Annealed) 1.35C	1.75C
Pittsburg, Calif. C11 .....	8.15	Spring Steel (Annealed) 1.75C	2.15C
SparsrowsPoint, Md. B2 .....	7.50	Spring Steel (Annealed) 2.15C	2.55C
Weirton, W.Va. W6 .....	7.40	Spring Steel (Annealed) 2.55C	3.15C
Yorkville, O. W10 .....	7.40	Spring Steel (Annealed) 3.15C	3.75C
<b>SHEETS, SILICON, H.R. or C.R. (22 Ga.)</b>	<b>ARMOR ELECT. DYNAMO COILS (Cut lengths <math>\frac{1}{2}</math> lower)</b>	<b>Key to Producers</b>	
0.25 lb	Field	A1 Acme Steel Co.	C10 Colorado Fuel & Iron
\$7.40	ture	A2 Alcoa Inc.	C11 Columbia-Geneva Steel
7.50	Sp. Pt., Md. B2	A3 Alan Wood Steel Co.	C12 Columbia Steel & Shaf
7.40	lb	A4 Allegheny Ludlum Steel	C13 Columbia Tool Steel Co.
7.40	lb	A5 Anchor Drawn Steel Co.	C14 Compressed Steel Shaft
7.80	lb	A6 Angell Nail & Chaplet	C15 Continental Steel Corp.
7.40	lb	A7 Armco Steel Corp.	C17 Copperweld Steel Co.
7.40	lb	A8 Atlantic Steel Co.	C18 Crucible Steel Co.
7.40	lb	A9 American Cladmetals Co.	C19 Cumberland Steel Co.
7.40	lb	B1 Babcock & Wilcox Co.	C20 Cuyahoga Steel & Wire
7.40	lb	B2 Bethlehem Steel Co.	C22 Claymont Steel Products
7.40	lb	B3 Beth. Pac. Coast Steel	Dept., Wickwire Spencer
7.40	lb	B4 Blair Strip Steel Co.	Steel Division
7.40	lb	B5 Bliss & Laughlin Inc.	D2 Detroit Steel Corp.
7.40	lb	B6 Bolard Steel Corp.	D3 Detroit Tube & Steel
7.40	lb	B7 Braeburn Alloy Steel	D4 Diston & Sons, Henry
7.40	lb	B8 Buffalo Bolt Co.	D5 Driver Harris Co.
7.40	lb	B9 Buffalo Steel Div., H. K. Porter Co.	D6 Dickson Weatherproof
7.40	lb	B10 Calumet Steel Div.	Nail Co.
7.40	lb	B11 Calumet Steel Div.	E1 Eastern Gas & Fuel Assoc.
7.40	lb	B12 Calumet Steel Div.	E2 Eastern Stainless Steel
7.40	lb	B13 Calumet Steel Div.	E4 Electro Metallurgical Co.
7.40	lb	B14 Calumet Steel Div.	E5 Elliott Bros. Steel Co.
7.40	lb	B15 Calumet Steel Div.	E6 Empire Steel Corp.
7.40	lb	B16 Calumet Steel Div.	F2 Firth Sterling Inc.
7.40	lb	B17 Calumet Steel Div.	F3 Fitzsimons Steel Co.
7.40	lb	B18 Calumet Steel Div.	F4 Follansbee Steel Corp.
7.40	lb	B19 Calumet Steel Div.	F5 Franklin Steel Div.
7.40	lb	B20 Calumet Steel Div.	F6 Fretz-Moon Tube Co.
7.40	lb	B21 Calumet Steel Div.	
7.40	lb	B22 Calumet Steel Div.	
7.40	lb	B23 Calumet Steel Div.	
7.40	lb	B24 Calumet Steel Div.	
7.40	lb	B25 Calumet Steel Div.	
7.40	lb	B26 Calumet Steel Div.	
7.40	lb	B27 Calumet Steel Div.	
7.40	lb	B28 Calumet Steel Div.	
7.40	lb	B29 Calumet Steel Div.	
7.40	lb	B30 Calumet Steel Div.	
7.40	lb	B31 Calumet Steel Div.	
7.40	lb	B32 Calumet Steel Div.	
7.40	lb	B33 Calumet Steel Div.	
7.40	lb	B34 Calumet Steel Div.	
7.40	lb	B35 Calumet Steel Div.	
7.40	lb	B36 Calumet Steel Div.	
7.40	lb	B37 Calumet Steel Div.	
7.40	lb	B38 Calumet Steel Div.	
7.40	lb	B39 Calumet Steel Div.	
7.40	lb	B40 Calumet Steel Div.	
7.40	lb	B41 Calumet Steel Div.	
7.40	lb	B42 Calumet Steel Div.	
7.40	lb	B43 Calumet Steel Div.	
7.40	lb	B44 Calumet Steel Div.	
7.40	lb	B45 Calumet Steel Div.	
7.40	lb	B46 Calumet Steel Div.	
7.40	lb	B47 Calumet Steel Div.	
7.40	lb	B48 Calumet Steel Div.	
7.40	lb	B49 Calumet Steel Div.	
7.40	lb	B50 Calumet Steel Div.	
7.40	lb	B51 Calumet Steel Div.	
7.40	lb	B52 Calumet Steel Div.	
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7.40	lb	B103 Calumet Steel Div.	
7.40	lb	B104 Calumet Steel Div.	
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7.40	lb	B106 Calumet Steel Div.	
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7.40	lb	B146 Calumet Steel Div.	
7.40	lb	B147 Calumet Steel Div.	
7.40	lb	B148 Calumet Steel Div.	
7.40	lb	B149 Calumet Steel Div.	
7.40	lb	B150 Calumet Steel Div.	
7.40	lb	B151 Calumet Steel Div.	

Chicago, Ill. R2 ....5

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Key to Producers	P13 Precision Drawn Steel
McClouth Steel Corp.	P14 Pitts. Screw & Bolt Co.
Mahoning Valley Steel	P15 Pittsburgh Metallurgical
Medart Co.	P16 Page Steel & Wire Div., Amer. Chain & Cable
Mercer Tube & Mfg. Co.	P17 Plymouth Steel Co.
Mid-States Steel & Wire	R1 Reeves Steel & Mfg. Co.
2 Moltrup Steel Products	R2 Republic Steel Corp.
3 Monarch Steel Co.	R3 Rhode Island Steel Corp.
National Supply Co.	R5 Roebling's Sons, John A.
National Tube Div.	R6 Russel Steel Co.
Neisen Steel & Wire Co.	R7 Faraday Electric Steel Co.
New Eng.—High Carb. Wire	R8 Reliance Div., Eaton Mfg. Co.
Newman-Crosby Steel	S1 Seneca Wire & Mfg. Co.
2 Niles Rolling Mill Div.	S3 Sharon Steel Corp.
4 Nirthwest Steel Roll. Mills	S4 Sharon Tube Co.
5 Northwestern S. & W. Co.	S5 Sheffield Steel Corp.
6 New Dephob Mfg. Co.	S6 Shemango Furnace Co.
Oliver Iron & Steel Corp.	S7 Simmons Co.
Oregon Steel Mills	S8 Simonds Saw & Steel Co.
Pacific States Steel Corp.	S9 Sloss-Sheffield S. & I. Div.
Pacific Tube Co.	S13 Standard Forgings Corp.
Phoenix Iron & Steel Co.	S14 Standard Tube Co.
Pilgrim Drawn Steel	S15 Stanier Works
Pittsburgh Coke & Chem.	S16 Struthers Iron & Steel
Pittsburgh Steel Co.	S17 Superior Drawn Steel Co.
Pittsburgh Tube Co.	S18 Superior Steel Corp.
1 Pollak Steel Co.	S19 Sweet's Steel Co.

T2 Tenn. Coal & Iron Div.  
 T3 Tenn. Prod. & Chem. Div.  
 T4 Texas Steel Co.  
 T5 Thomas Strip Division,  
 Pittsburgh Steel Co.  
 T6 Thompson Wire Co.  
 T7 Timken Roller Bearing  
 Tonawanda Iron Div.,  
 Am. Rad. & Stan. San.  
 U4 Universal Cyclops Steel  
 U5 United States Steel Corp.  
 V2 Vanadium-Alloys Steel  
 V3 Vulcan Crucible Steel Co.,  
 Wallace Barnea Co.  
 W2 Wallingford Steel Co.  
 W3 Washburn Wire Co.  
 W4 Washington Steel Corp.  
 W6 Weirton Steel Co.  
 W7 W. Va. Steel & Mfg. Co.  
 W8 West. Auto. Mach. Screw  
 W9 Wheatland Tube Co.  
 W10 Wheeling Steel Corp.  
 W12 Wickwire Spencer Steel  
 Div., Colo. Fuel & Iron  
 W13 Wilson Steel & Wire Co.  
 W14 Wisconsin Steel Div.,  
 International Harvester  
 W15 Woodward Iron Co.

Per net ton.

## TOOL STEEL

Grade	\$ per lb	(15) 1/2 and under.
Regular Carbon	0.230	(16) 40 lb and under.
	0.270	(17) Flats only.
		(18) To dealers.

Extra Carbon	0.270	(19) Chicago & Pitts. base.
Special Carbon	0.325	(20) 0.25c off for untreated.
Oil Hardening	0.350	(21) New Haven Conn., base

5% Cr Hot Work . . . . 0.350 (22) Del. San Francisco Bay  
 Hi-Carbon-Cr . . . . . 0.635 area.  
 (23) 20Ga. 36" wide.

Grade by Analysis (24) Deduct 0.20c. finer than  
 W Cr V Co 15 Ga.  
 18 4 1 . . . . 1.505 (25) Bar mill bands.

18 4 2 . . . 1.66-1.66 (26) Reinforcing, mill lengths, to fabricators; 20.25 4.25 1.6 12.25 3.535-3.675 to consumers, 5.85c.

19 2 2 2.125 (27) Bar mill sizes.  
 18.25 4.25 1 4.75 2.125 (28) Bonderized.  
 18 4 2 9 2.445-2.45 (29) Add \$31.50 per ton.

13.5 4 3 .... 1.6025 (30) Sheared; add 0.35c for  
 9 3.25 0.5 .... 1.01 universal mill.  
 W Cr V Mo (31) Not annealed.

6.4	4.5	1.9	5	0.96-0.965	(32) Rd. or square edge.
6	4	3	6	1.190	(33) To jobbers, deduct 20c.
5	4	2	5	0.810	(34) 7.85c for cut lengths.

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13 (35) 72" and narrower. (36) 54" and narrower. (37) 15 gage & lighter: 60"

C18, D4, F2, J3, L3, M14, S8, & narrower.  
U4, V2 and V3. (38) 14 gage & lighter:  
48" & narrower.  
(39) 49" & narrower.

**FOOTNOTES** (39) 48" and narrower.  
 (1) Chicago base. (40) Lighter than 0.035";  
 (2) Angles, flats, bands. 0.035" and heavier.  
 0.050" thicker.

(3) Merchant.	0.25% higher.
(4) Reinforcing.	9.10c for cut lengths.
(6) Chicago or Birm. base.	(41) Plus 0.375c per 100 lb.
(5) Washburn 2-cab. lower.	(42) Plus 4.72c on base and

(7) To jobbers, 3 coins lower.	(43) Plus 4.7% on base and extras.
(8) 16 gage and heavier.	
(9) 6 in. and narrower.	(44) Plus 45c per 100 lb.
(10) Pittsburgh base.	(45) Plus 40c per 100 lb.

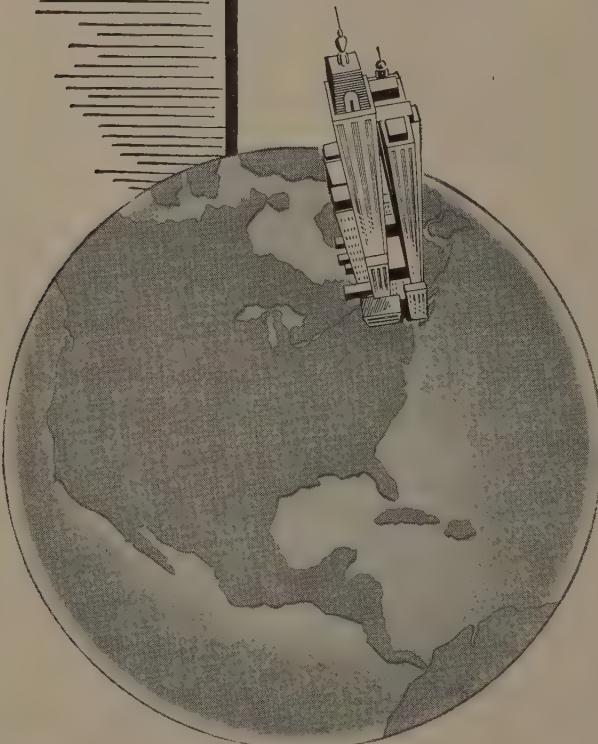
(10) Pittsburgh base. (45) Plus 4½ per 100 lb.  
(11) Cleveland & Pitts. base. (46) Plus 2.2 per cent.

# Since 1850

WE HAVE PRODUCED ENOUGH  
IRON ORE TO MAKE THE STEEL  
TO BUILD A CITY THE SIZE OF  
NEW YORK:—

... During our first century we have furnished the steel makers of America with considerably more than two hundred million tons of high grade iron ores. The many years in which we have produced and shipped these ores have given us a reputation of reliability and integrity.

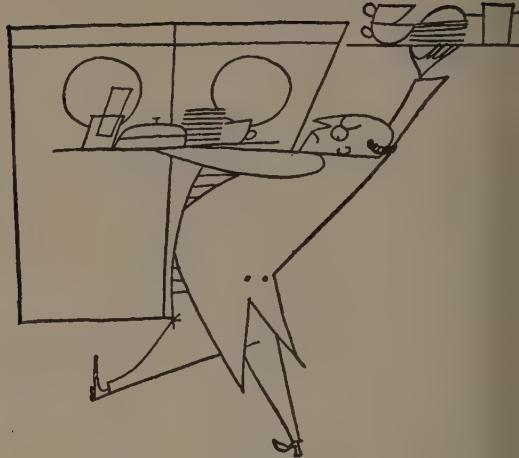
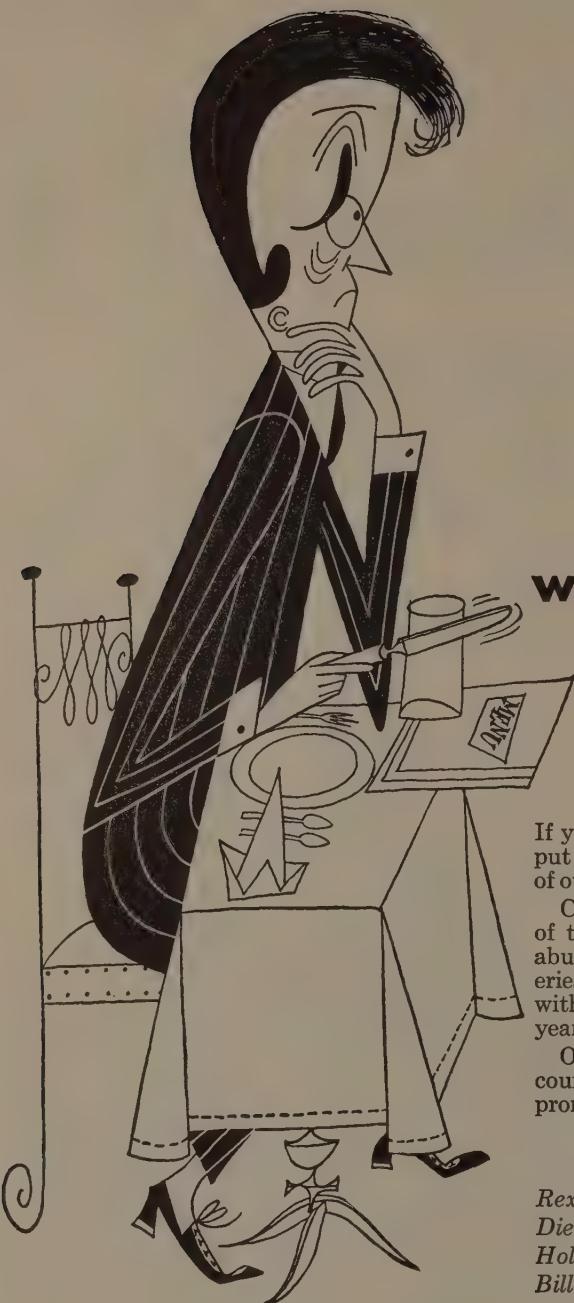
In the second century we will not rest on our laurels, but will continually strive to improve the quality of our ores, coals and lake transportation.



*The Cleveland-Cliffs Iron Company*

UNION COMMERCE BUILDING • CLEVELAND 14, OHIO





## want speedy service on tool steels?

If you need tool steel, or any other specialty steel in a hurry, put in a call to Crucible. All our warehouses have good stocks of our more than 400 steels.

Crucible customers have been taken care of — regardless of their volume of business or whether steel is in short or abundant supply. They can always depend on reliable deliveries, and top quality. That's why many of them have been with us since we were founded . . . now more than fifty years ago.

Our warehouses are conveniently located throughout the country. Why don't you call the nearest one today, for prompt, reliable delivery.

### *Stocks maintained of:*

*Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . AISI Alloy, Max-el Machinery, On-off Spring and Special Purpose Steels*

# CRUCIBLE

first name in special purpose steels

53 years of *Fine* steelmaking

## WAREHOUSE SERVICE

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.  
Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DAYTON • DENVER • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH • PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • ST. PAUL • SYRACUSE • TORONTO, ONT. • WASHINGTON, D.C.

## WAREHOUSE STEEL PRODUCTS

representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

SHEETS		STRIP		BARS		Standard Structural Shapes		PLATES	
H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	4140††‡	Carbon	Floor
altimore	5.81	7.17	8.37	6.42	...	6.41	7.42	11.17	6.47
ton	6.51	7.36	8.54	6.55	...	6.42	7.49	11.18	6.56
alo	5.80	6.65	8.41	6.21	...	5.90	6.95	11.07	6.08
irmingham	5.80	6.65	7.70‡	5.80	...	5.80	8.65	...	5.95
ago	5.80	6.65	8.00	5.83	...	5.83	8.80	10.65	5.95
incinnati	6.13	6.72	8.47	6.14	...	6.13	7.16	11.07	6.42
erland	5.80	6.65	8.14	6.00	...	5.89	6.90	10.79	6.28
roft	6.07	6.87	8.64	6.13	7.70	6.12	7.10	10.92	6.42
ton	6.74	...	8.72	6.89	...	6.98	...	...	6.82
eyCity, N.J.	6.35	7.27	8.47	6.75	...	6.59	7.78	9.54	6.39
Angels	6.60	8.45	9.60	6.75	11.20	6.60	8.60	12.05	6.60
waukee	5.97	8.82	8.17	6.00	...	6.00	7.07	10.82	6.12
ne, Ill.	6.16	7.00	8.35	6.19	...	6.18	7.16	...	6.30
ark, N. J.	6.62	7.41	8.63	6.72	...	6.79	7.71	...	6.70
York	6.26	7.27	8.42	6.56	...	6.59	7.53	11.04	6.39
folk, Va.	7.60	...	...	...	...	6.44	8.70	...	7.25
adelphia	6.11	7.13	8.30	6.45	8.30	6.42	7.45	10.79	6.17
sburgh	5.80	6.65	8.00	5.94	...	5.83	6.90	10.65	5.95
land, Oreg.	7.80	9.05	10.00	7.60	...	7.35	9.65	...	7.30
mond, Va.	6.14	6.95	8.68	6.53	...	6.30	7.63	...	6.58
Louis	6.10	6.94	8.30	6.14	...	6.13	7.20	10.95	6.35
Paul	6.47	7.31	8.66	6.50	...	6.49	7.57	...	6.61
Francisco	6.90	8.20	9.60	6.75	...	6.65	8.65	12.05	6.50
ttle-Tacoma	7.36	9.04	9.70	7.95	...	7.13	9.62	11.90§	6.87
ame (city)	7.80	9.40	10.70	7.65	...	7.10	9.70	11.90	7.00
hington	6.31	7.61	8.90	6.89	...	6.90	8.03	...	6.93

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; ‡—500 to 1499 lb; §—1000 to 1999 lb.

## Ores

## Lake Superior Iron Ore

ss ton, 51 1/2% (natural), lower lake ports.	
range bessemer	\$9.45
range nonbessemer	9.30
abi bessemer	9.20
abi nonbessemer	9.05
i phosphorus	9.05
fter adjustment for analysis, prices will be for	
ases or decreases after Dec. 1, 1950, in	
leable lake vessel rates, upper lake rail	
ghts, dock handling charges and taxes	
on.	

## Eastern Local Iron Ore

Cents per unit del. E. Pa.	
dry and basic 56-62% concentrates	
tract	17.00

## Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports	
ish basic, 60 to 68%:	
ot	nom.
ng-term contract	24.00
h African hematites (spot)	26.00-28.00
llian iron ore, 67-69% (spot)	32.00

Tungsten Ore	
Net ton unit, duty paid	
ng wolframite and scheelite, per	
t ton unit	\$65.00
estie scheelite, mines	65.00

## Manganese Ore

ganese, 43% nearby, \$1.18-\$1.22 per long	
nt, c.i.f. U. S. ports, duty for buyer's	
nt; shipments against old contracts for	
ore are being received from some sources	
5c-87c.	

Chrome Ore	
ton, f.o.b. cars, New York, Philadelphia,	
Baltimore, Charleston, S. C., plus ocean	
nt differential for delivery to Portland,	
or Tacoma, Wash.	

Indian and African	
2.8.1	\$39.00-\$42.00
3.1	44.00-45.00
no ratio	30.00-32.00

South African Transvaal	
no ratio	\$27.00-\$28.00

Brazilian	
2.5:1 lump	nom.

Domestic	
(Rail nearest seller)	\$39.00

Molybdenum	
uide concentrates per lb, molyb-	

num content, mines	\$1.00
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## MANGANESE ALLOYS

Spiegelreisen: (19-21% Mn, 1-3% Si), Carlott per gross ton, \$85, Palmerston, Pa.; \$85 Pittsburgh and Chicago; (16% to 19% Mn) \$1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk \$225 per gross ton of alloy, c.i.l. packed \$237; gross ton lots, packed, \$225; less gross ton lots, packed \$268; f.o.b. Sheridan, Pa., Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, Ohio, Marietta, O., Lynchburg, Va. Base price: \$227, Johnstown, Pa.; \$228, Etna, Pa.; \$226, Anaconda, Mont.

Shipment from Pacific Coast warehouses by one seller, add \$3 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots \$267; less gross ton lots, \$284, f.o.b. Chicago. Add or subtract \$2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. Special Grade: (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Electromanganese: (Carload, 30c; ton lots, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

Ferromanganese: (55-75%), Per lb, contained Mn f.o.b. Langlois, \$1.82 in all sizes except powdered which is \$1.41; Washington, Pa., furnace, any quantity \$1.32.

Technical Molybdenum: (55-75%), Per lb, contained Mo f.o.b. Langlois, \$1.14, in cans; in bags, \$1.13, f.o.b. Langlois, Pa.; Washington, Pa., \$1.13.

lots \$1.35, less ton \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract, \$177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract, \$195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

## OTHER FERROALLOYS

Ferro columbium: (Cb 56-60%, Si 8% max., C 0.4% max). Contract, ton lot, 2" x D, \$4.90 per lb of contained Cb, less ton \$4.95. Delivered. Spot, add 10c.

Ferrotantalum-Columbium: (Cb 40% approx., Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, \$3.75 per lb of contained Cb plus Ta, deld.; less ton lots \$3.80.

Silicium Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x 12 M, 45c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, 1/2" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.I. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.5c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 33-42%, Si 17-19%, Mn 8-11%). C.I. packed, 15c per lb of alloy; ton lots 16.5c; less ton lots 17.75c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Simanalo: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of \$3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigo, Tenn., \$65 per gross ton.

Ferromolybdenum: (55-75%), Per lb, contained Mo f.o.b. Langlois, \$1.82 in all sizes except powdered which is \$1.41; Washington, Pa., furnace, any quantity \$1.32.

Technical Molybdenum-Oxide: Per lb, contained Mo, f.o.b. Langlois, Pa., \$1.14, in cans; in bags, \$1.13, f.o.b. Langlois, Pa.; Washington, Pa., \$1.13.

Note: For current prices on chromium, silicon, vanadium, boron and tungsten alloys see page 175, Feb. 2 issue; calcium, strontium, briqueted alloys and refractories, page 115, Jan. 26 issue.

## TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, \$1.50 per lb of contained Ti; less ton \$1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton

## CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

## STEELMAKING SCRAP COMPOSITE

Feb. 12	\$43.00
Feb. 5	43.00
Jan. 1953	43.00
Feb. 1952	43.00
Feb., 1948	40.48

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

## Grade 1

	No. 1 Bundles	No. 1 Dealer, Melt
Basing Point	Heavy Bundles	Heavy Dealer, Melt

Alabama City, Ala.	\$39.00	\$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monesen, Pa.	44.00	46.00
Phenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

## Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades		
2. No. 1 Busheling	Base	
3. No. 1 Heavy Melting	-\$1.00	
4. No. 2 Heavy Melting	-1.00	
5. No. 2 Bundles	-1.00	
6. Machine Shop Turnings	-10.00	
7. Mixed Borings and Short Turnings	-6.00	
8. Shoveling Turnings	-6.00	
9. No. 2 Busheling	-4.00	
10. Cast Iron Borings	-6.00	

## Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50	
12. Bar Crops & Plate	+ 5.00	
13. Cast Steel	+ 5.00	
14. Punchings & Plate Scrap	+ 2.50	
15. Electric Furnace Bundles	+ 2.00	

## Cut Structural &amp; Plate:

16. 3 feet and under	+ 3.00	
17. 2 feet and under	+ 5.00	
18. 1 foot and under	+ 6.00	
19. Briquetted Cast Iron Borings	Base	

## Foundry, Steel:

20. 2 feet and under	Base	
21. 1 foot and under	+ 2.00	
22. Springs and Crankshafts	+ 1.00	
23. Alloy Free Turnings	- 3.00	

24. Heavy Turnings	1.00	
25. Briquetted Turnings	Base	
26. No. 1 Chemical Borings	3.00	
27. No. 2 Chemical Borings	4.00	
28. Wrought Iron	+ 10.00	
29. Shafting	+ 10.00	
31. Old Tin & Terne Plated Bundles	- 10.00	

## Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	6.00	
33. No. 2 Bundles	9.00	
34. Other than material suitable for hydraulic compression	8.00	

## Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

## Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	-\$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelsets.	Base
5. No. 1 Busheling	- 3.50
6. No. 1 Turnings	- 3.00
7. No. 2 Turnings, Drillings & Borings	- 12.00
8. No. 2 Cast Steel and uncut wheelcenters	- 6.00
9. Uncut Frogs, Switches	Base
10. Flues, Tubes & Pipes	- 8.00
11. Structural, Wrought Iron and/or/steel, uncut	- 6.00
12. Destroyed Steel Cars	- 8.00
13. No. 1 Sheet Scrap	- 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
22. Uncut Bolsters & Side Frames	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+ 12.00
26. Steel Wheels, No. 3, oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	- 8.00
32. Boilers	- 6.00
33. No. 2 Sheet Scrap	- 13.00
34. Carsides, Doors, Car Ends, cut apart	- 6.00
35. Unsorted Iron & Steel	- 6.00
36. Unprepared scrap, not suitable for hydraulic compression	- 8.00

## Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, \$8.

(2) For hydraulically compressing Grade No. 1, \$6 per ton;	No. 1 bundles
Grade No. 5, \$8.	No. 2 bundles
(3) For crushing Grade No. 6, \$3.	Mixed borings, turnings
For preparing into:	Shoveling turnings
(4) Grade No. 25, \$6.	Cast iron borings
(5) Grade No. 19, \$6.	(F.o.b. shipping point)
(6) Grade No. 12, No. 13, No. 14, No. 16, or No. 20, \$10.	No. 1 cupola
(7) Grade No. 17 or No. 21, \$11.	Charging box cast
(8) Grade No. 18, \$12.	Burnt cast
(9) For hydraulically compressing Grade No. 18, \$8.	Stove plate
(10) For preparing into Grade No. 28, \$10.	Clean auto cast

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, \$8.	(F.o.b. shipping point)
(2) For hydraulically compressing Grade No. 13, \$6.	(F.o.b. shipping point)
For preparing into:	
(3) Grade No. 16, \$4.	No. 1 heavy melting
(4) Grade No. 17, \$5.	No. 2 heavy melting
(5) Grade No. 18, \$7.	No. 3 bundles
(6) Grade No. 21, \$4.	No. 2 bundles
(7) Grade No. 23, \$4.	No. 1 cupola cast

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, \$9.	New York (Brokers' buying prices)
(2) For preparing Grade No. 3 into Grade No. 11, \$7.	No. 2 heavy melting
(3) For preparing Grade No. 3 into Grade No. 1, \$4.	Mixed borings, turnings
(4) For preparing Grade No. 3 into Grade No. 1, \$4.	Machine shop turnings
(5) For preparing Grade No. 3 into Grade No. 1, \$4.	Cupola cast

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	Philadelphia
(2) No. 2 Cupola	No. 1 heavy melting
(3) No. 2 Cupola	No. 2 heavy melting
(4) No. 1 Cupola	No. 1 bundles
(5) No. 1 Cupola	No. 2 bundles

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	San Francisco (Delivered)
(2) No. 2 Cupola	No. 2 heavy melting
(3) No. 2 Cupola	No. 1 bundles
(4) No. 1 Cupola	No. 2 bundles
(5) No. 1 Cupola	No. 1 cupola cast

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	Pittsburgh (Delivered)
(2) No. 2 Cupola	No. 2 heavy melting
(3) No. 2 Cupola	No. 1 bundles
(4) No. 1 Cupola	No. 2 bundles
(5) No. 1 Cupola	No. 1 cupola cast

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	Seattle (Delivered)
(2) No. 2 Cupola	No. 2 heavy melting
(3) No. 2 Cupola	No. 1 bundles
(4) No. 1 Cupola	No. 2 bundles
(5) No. 1 Cupola	No. 1 cupola cast

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	Youngstown (Delivered)
(2) No. 2 Cupola	No. 2 heavy melting
(3) No. 2 Cupola	No. 1 bundles
(4) No. 1 Cupola	No. 2 bundles
(5) No. 1 Cupola	No. 1 cupola cast

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	HAMILTON, ONT. (Delivered Prices)
(2) No. 2 Cupola	No. 2 heavy melting
(3) No. 2 Cupola	No. 1 bundles
(4) No. 1 Cupola	No. 2 bundles
(5) No. 1 Cupola	Mechanical Bundles

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	St. Louis (Delivered)
(2) No. 2 Cupola	No. 2 heavy melting
(3) No. 2 Cupola	No. 1 bundles
(4) No. 1 Cupola	No. 2 bundles
(5) No. 1 Cupola	No. 1 cupola cast

Unstripped motor blocks 32.00-33.00

(1) No. 1 Cupola	Chicago (Delivered)
(2) No. 2 Cupola	No. 2 heavy melting
(3) No. 2 Cupola	No. 1 bundles
(4) No. 1 Cupola	No. 2 bundles
(5) No. 1 Cupola	No. 1 cupola cast

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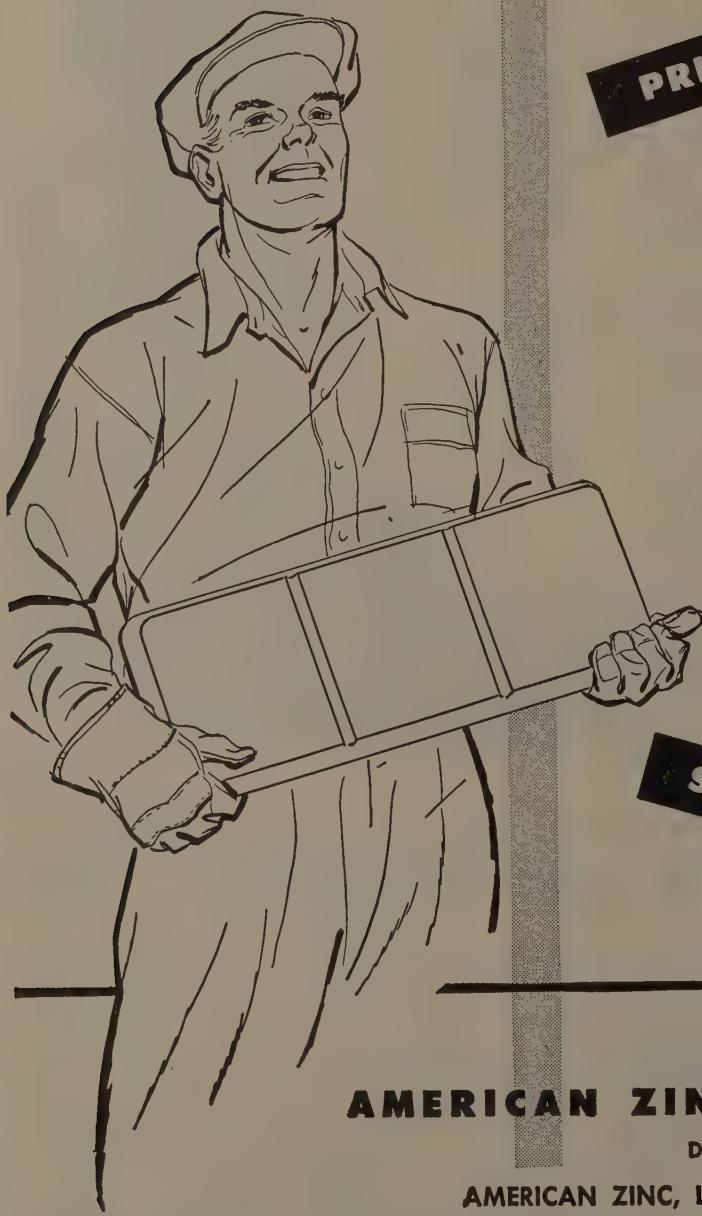
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# The Metal Market



## New Contender in Lightweight Ranks

Imagine an eight-room house that weighs only 2300 pounds, and you can imagine the new all-aluminum house being built by Aluminum Ltd., Montreal. To be distributed by Aluminum Import Corp., the house will be fire-proof, corrosion-resistant and will take punishment of tropical climates. Complete instructions and necessary tools are enclosed with every house, one of which is seen above

**Until they find out what's going to happen when on decontrol basis, sellers are dealing cautiously. Decontrol of nickel and other tight metals will be difficult**

PENDING price decontrol on industrial materials and promised dismantling of CMP is stirring up buying interest in all near-ceiling metals. Sellers aren't nearly so eager to trade until the smoke clears.

The buying rush is easy to explain. Fabricators want to protect future positions from standpoints of price and adequate supply. Metals at ceilings are naturally those in tightest supply, and greatest demand users will take as much as they can get at current rates. Inventory regulations casually disregarded since their inception will be openly ignored from now on.

**Selective Retention**—Decontrol of some of the high-priority metals such as nickel and other alloying materials will present sticky problems. Continued allocations of these until '51, perhaps longer, is certain. Washington reports say third quarter application forms won't go out to civilian goods producers; a decision on military goods producers should be reached soon.

There's a strong possibility that some form of selective price controls—embracing materials under full allocation—will be kept in force. Pressure is mounting for OPS to let in-

dustry know where it stands so plans can be made accordingly. A detailed price decontrol timetable in preparation would do it. It may be made public this week.

**Crowded Corner**—Universal recognition that a hefty boost in domestic copper price is coming lends impetus to forward buying. One dealer reminds its customers that "there are no regulations to prevent farsighted customers from contracting now for copper needed during the second half of 1953, especially if the price is attractive."

Placing orders for first quarter delivery worries users now. Finding a home for February supplemental tickets has been no picnic. Everyone wants to sign up for delivery before the Apr. 30 price deadline. Order books after that date are much less crowded. Supply has been affected not only by prices, but also by a New York tugboat strike which held up unloading of some 15,000 tons of Chilean copper for ten days.

**Not Too Dismal**—While the weeks following price freeing will undoubtedly see a great deal of readjustment and speculation (marked by consumption of some fantastic deals), the future is not as dark as pictured by

many copper users. Today the average price of copper to a manufacturer using his 60 per cent domestic allocation and 40 per cent foreign entitlement is 29.30 cents a pound. Following initial fluctuations, the domestic quotation will rise to about that level and pressure on foreign producers to meet that level will be strong.

At least 5000 tons more copper per month will be available when price controls go off, by NPA's conservative estimate. Too, the copper industry is getting more competitive-minded because of substitution pressure for other materials. A seven-cent rise in cost to fabricators would price copper above a healthy slice of its current market.

## Aluminum Curbs Fade

Aluminum regulations are being eased perceptibly. Second-quarter allocations to most civilian producers were upped from 55 to 60 per cent of base-period consumption in one of DPA's final acts before merger into ODM. NPA pepped up the market for aluminum from France, Norway, Germany and the U. K. by allowing unlimited foreign purchases in addition to domestic allotments. The order specifically excludes Canadian imports. Price for ingot is about 5.5 cents a pound above U. S. delivered prices. Only a limited amount of conversion work can be expected at this price. Spot purchases of mill products are discouraged by high tariffs.

## NPA Revokes Tin Controls

NPA finally "recognized the obvious," as tin dealers say, and revoked all inventory and use restrictions on tin, tin and terne plate, collapsible tubes, cans and closures. Monthly reports on shipments, receipts, consumption and stocks are still required.

## Light Metals Soar

Statistics on 1952 operations show spectacular gains in light metals output. Magnesium output rocketed 259 per cent over the year before to 105,821 tons, says the Bureau of Mines. Aluminum output reached 937,321 tons, an all-time record, reports the Aluminum Association. Primary output was 12 per cent greater than 1951, but sheet and plate shipments ran 0.4 per cent less, foil 17 per cent less and castings 4 per cent less.

## NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

## Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62c, delivered.

Brass Ingots: 85-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 11.50c; brass special 11.75c; intermediate 12.00c; East St. Louis; high grade 12.85c, and special high grade 13.00c, delivered.

Lead: Common 13.30c; chemical 13.40c; corrodin, 13.40c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, \$205-\$206, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, \$1.595 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, \$2 del.; special or patterned shapes \$2.15.

Cobalt: 97.99%, \$2.40 per lb for 500 lb (kegs); \$2.42 per lb for 100 lb (case); \$2.47 per lb under 100 lb.

Gold: U. S. Treasury, \$35 per ounce.

Silver: Open market, New York 85.25c per oz.

Platinum: \$90-\$93 per ounce from refineries.

Iridium: \$23-\$24 per troy ounce.

Titanium (sponge form): \$5 per pound.

## Rolled, Drawn, Extruded Products

## COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18% 55.08; phosphor-bronze grade A, 5% 64.71.

Red: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95% 44.84; 90% 44.07; red brass 85% 42.79; 80% 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%; 47.04; red brass, 85% 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95% 44.48; 90% 44.67; red brass, 85% 43.39; 80% 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 32.75c; 30,000 lb lots, 32.92c; l.c.l., 33.42c. Weatherproof, 100,000 lb, 33.60c; 30,000 lb, 33.85c; l.c.l., 34.35c. Magnet wire del., 15,000 lb or more, 38.75c; l.c.l., 39.50c.

## DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Alum- inum	An- timony	Nickel	Silver
Feb. 3-5	24.50	13.30	11.50	121.50	20.50	34.50	60.00	85.25
Feb. 2	24.50	13.30	11.50	121.50	20.50	34.50	60.00	85.25
Jan. 27-31	24.50	13.80	12.00	121.50	20.50	34.50	60.00	85.25
Jan. 22-26	24.50	13.80	12.50	121.50	20.50	34.50	60.00	85.25
Jan. 16-21	24.50	13.80	12.50	121.50	20.00	34.50	60.00	85.25
Jan. 15	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.75
Jan. 14	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.25
Jan. 13	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.75
Jan. 12	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 7-10	24.50	14.30	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 2-5	24.50	14.55	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 1953 Avg.	24.50	13.838	12.586	121.50	20.173	34.50	58.654	84.442
Feb. 1952 Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. 1948 Avg.	21.50	14.825	12.00	94.00	15.00	33.00	83.75	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, El. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99% del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

## ALUMINUM

(\$30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness	Widths or Range	Flat Diameters, In.	Sheet Inc.	Coiled Base*	Sheet Base	Coiled Sheet Base
0.249-0.136	12-48	32.9	...	...	...	...
0.135-0.096	12-48	33.4	...	...	...	...
0.095-0.077	12-48	34.1	31.8	36.3	...	...
0.076-0.067	12-48	34.7	32.0	36.5	...	...
0.060-0.048	12-48	35.0	32.2	36.8	...	...
0.047-0.038	12-48	35.5	32.6	37.1	...	...
0.037-0.030	12-48	35.9	33.0	37.8	...	...
0.029-0.024	12-48	36.5	33.8	38.3	...	...
0.023-0.019	12-36	37.1	34.0	39.0	...	...
0.018-0.017	12-36	37.9	34.6	39.9	...	...
0.016-0.015	12-36	38.8	35.4	41.1	...	...
0.014	12-24	39.8	36.4	42.4	...	...
0.013-0.012	12-24	40.9	37.1	43.4	...	...
0.011	12-24	41.9	38.3	45.0	...	...
0.010-0.0095	12-24	43.1	39.4	46.6	...	...
0.009-0.0085	12-24	44.3	40.7	48.5	...	...
0.008-0.0075	12-24	45.8	41.9	50.3	...	...
0.007	12-18	47.3	43.4	52.6	...	...
0.006	12-18	48.9	44.8	57.6	...	...

\* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance —Round— Hexagonal

across flats	17S-T4	17S-T4
0.125	56.8	...
0.156-0.0188	48.0	...
0.219-0.313	45.3	...
0.375	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.638	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

## LEAD

(Prices to Jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more \$19.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils \$19.00 per cwt. Traps and bends: List prices plus 43%.

## ZINC

(Sheets 23.00c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c. Traps and bends: List prices plus 43%.

## "A" NICKEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled, 79.50c. Strip, cold-rolled, 55.50c. Rods and shapes, 75.50c. Plates, 77.50c. Seamless tubes, 108.50c.

## MONEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled, 63.00c. Strip, cold-rolled, 66.00c. Rods and shapes, 61.00c. Plates, 62.00c. Seamless tubes, 98.00c. Shot and blocks, 54.50c.

## MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

## TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, \$15; sheared mill plate, \$12; strip, \$15; wire, \$10; forgings, \$6; hot-rolled and forged bars, \$6.

## ALUMINUM

(\$30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Alu. 12-48 32.9

Alu. 12-24 33.4

Alu. 12-18 34.1

Alu. 12-12 34.7

Alu. 12-8 35.5

Alu. 12-4 36.2

Alu. 12-2 36.7

Alu. 12-1 37.1

Alu. 12-0.5 37.5

Alu. 12-0 38.1

Alu. 12-0.5 38.5

Alu. 12-0 39.1

Alu. 12-0 39.7

Alu. 12-0 39.9

Alu. 12-0 40.1

Alu. 12-0 40.3

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Alu. 12-0 57

lates . . .

Plate Prices, Page 141

Philadelphia—District plate mills are turning away far more commercial work for second quarter than they are schedule. Some haven't opened books for the entire period but could readily fill up if they so desired. Strength is reflected in the fact high premium mills are still quoting at unchanged levels and continue active.

Pittsburgh—Steel plate business is currently strong but there is no longer the hue and cry from customers for deliveries, especially for heavy gage plates. Strong third quarter is anticipated for heavy plates.

Boston—Plate fabricators able to strip mill universal plates, 36-inches and under in lighter gages, are getting ample tonnage, but wider and heavier sheared stock is parcelled out sparingly with substantial volume being high priority ratings. June schedules will be quickly filled once producers open books for that period. New York—Little let-up is noted plate demand. Fabricators are unable to obtain as much tonnage as they would like and in most instances reservations are limited.

sheets, Strip . . .

Sheet and Strip Prices, Page 141 &amp; 142

Cleveland—Indications are carrying tonnage from first to second quarter will be so substantial producers will be hard pressed right into third quarter to meet consumer requirements. Except for a few specialties, all of the light flat-rolled products continue under pressure. Recent easing in galvanized sheets is believed largely seasonal and expectations are that with spring a strong pickup in requirements for the coated sheets will develop. Electrical sheets are moving more actively than some in the back reflecting largely the noticeable betterment in the home appliance industry.

Boston—Demand for flat-rolled steel is heaviest in cold-finished sheets. Second quarter schedules on flat product are more extended. Heaviest in hot-rolled are heavier gages for household tanks. For the most part, second quarter space in straight chromium grades of stainless steel, both sheets and strip.

New York—Demand for hot and cold-rolled sheets appears to be expanding. Automotive requirements are heavy and there is an active inquiry for most lines of household appliances.

Philadelphia—No balance between supply and demand in hot and cold-rolled sheets, enameling stock and carbon sheets is expected in first quarter. Balance may come in galvanized sheets. Since the first of the year there has been some easing in supply, especially in the lighter gages, 26 and 28, for instance, but seasonal influences may alter this trend within the next few weeks.

Pittsburgh—Demand is slightly stronger for hot and cold-rolled sheets, long terne and electrical gages. Galvanized sheets, on the other hand, are beginning to back on the mills.

Detroit—Supply of cold-rolled sheets appears to be causing more demand among consumers than here-

## LOOPS



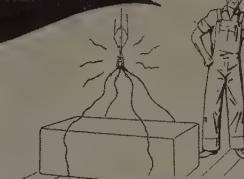
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tofore, but no one reports any further extension in delivery dates.

**Chicago** — Sheet demand exceeds output so far, some users are attempting to help themselves by agreeing to take commercial grade instead of hot-topped material. This applies to both hot and cold-rolled. Such substitution can't be made in all cases, but there are numerous borderline cases where it can. The switching is considerable.

**St. Louis** — Cold-rolled sheets are in heavy demand. Deliveries are four months behind, despite the fact three months were kept unsold in the last two quarters in an effort to get current. Equipment trouble interfered.

**Birmingham** — Pressure is being applied for all available cold-rolled sheet tonnage.

**Los Angeles** — Japanese flat rolled steel of good quality is available intermittently in large quantities at domestic warehouse prices or less. Promised delivery is 60 days.

## Conversion Steel . . .

**Chicago** — Although some users of conversion steel, such as household appliances, have lost interest in further acquisitions, automobile builders have not. The latter are pressing for additional second quarter sheet tonnage. Inland Steel Co., the leading mill here participating in such operations, is accepting no further business. Its capacity for processing ingots, slabs and hot-rolled bands is fully committed through June.

## Steel Bars . . .

Bar Prices, Page 141

**Boston** — Gradual improvement in smaller sizes of carbon bars is enabling more users to improve their inventory position. In heavier sizes consumers are pressing for tonnage with June mill schedules practically filled. For smaller sizes notably in cold-finished, there are openings in May. Contributing strongly to alloy bar demand is small arms production.

**New York** — Pressure for hot carbon bars continues strong and for practically all sizes, especially the larger from 2½ inches and up, which fall in the shell making range. Producers say second quarter demands will be heavier than they can supply.

**Philadelphia** — Small sizes of cold-drawn bars are in easier supply than other carbon bar specifications. This does not mean commercial consumers can get early delivery promises from cold-drawers as a rule, but they can upon occasion, and they should have no difficulty at all in picking up sizes under 1-inch from warehouses.

**Pittsburgh** — Small flood of inquiries from the Middle West is reaching Pittsburgh for small diameter bars. Atomic energy project in Portsmouth, O., is credited with this regional demand.

**Cleveland** — While the smaller sizes are in steadily improved supply, consumers do not anticipate much change soon in tight supply conditions with respect to the larger bar sizes. Military and high-rated de-

fense requirements continue to g shipping preference, and barring sharp cutback in the defense program, which doesn't seem likely, there is little chance for much improvement in supply for the regular commercial trade.

**Detroit** — Except for small sizes bars are in hand-to-mouth supply. Consumers are in an uncomfortable position but no cases are reported where the shortage of steel has actually forced a curtailment in manufacturing.

**Chicago** — Recent strike at Inland Steel Co. was costly to civilian bar users. Bar rolling schedules were hit hardest. In some sizes the company has notified customers that delivery dates must be moved back a month.

## Rails, Cars . . .

Track Material Prices, Page 143

**New York** — Domestic freight car orders in January involved 5536 units, bringing the backlog as of Feb. 1 up to 77,414, according to a joint statement by the American Railway Car Institute and the Association of American Railroads. Deliveries mounted to 7981 cars against 78,000 in the preceding month. This was the highest total since March, 1952.

## Chicago Leads Capacity Gain

**New York** — Steel capacity increased last year from the standpoint of actual tonnage was greatest in the Chicago district, according to the American Iron & Steel Institute. The largest percentage increase, however, was scored in the Cleveland-Detroit district.

The Chicago district increased by about 2,702,000 tons, up 12.1 per cent from Jan. 1, 1952. Area capacity now is rated at 24,960,600 tons, second largest of the six major producing districts.

The Cleveland-Detroit district scored a 14.5 per cent increase with capacity now 12,002,900 tons annually. Southern district capacity is now 6,036,160 tons, up 14.1 per cent from the start of 1952.

In the Eastern district steel capacity now stands at 23,863,810 tons, an increase of 2,153,940 or 9.9 per cent during 1952. In the Western district the capacity is 7,063,000 tons, rising 571,000 tons or 8.8 per cent.

The leading steel producing district, Pittsburgh-Youngstown, achieved an increase of 1,270,240 tons last year. The district capacity is rated at 46,621,000 tons.

During the last 13 years the largest percentage rise in steel capacity has been in the West, at 223 per cent. This is followed by a gain of 92 per cent in the South.

Meanwhile, an increase of about 9,163,000 tons in steel capacity of the Pittsburgh-Youngstown district is the largest gain in tonnage for any district during the 13-year interval. This is followed by a 7,704,000 ton rise in the Eastern district; 7,177,000 tons in the Chicago area; 4,877,000 tons in the Western district; 4,103,000 tons in the Cleveland-Detroit area and 2,905,000 tons in the South.

The largest tonnage increase in blast furnace capacity last year took place in the Eastern district. The gain was over 2.3 million tons,

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7 per cent. This district also made the greatest tonnage increase from the start of 1940 to the beginning of 1953—5,370,000 tons. The greatest percentage increase in the 13 years was 337.7 per cent in the West.

## Wire . . .

Wire Prices, Page 143

**Boston**—Openings for May and June schedules exist for numerous wire mill products. Second quarter schedules vary, depending on demand and the type of finished wire produced. Headline wire requirements are substantial for automobile assembly, but needs for new manufacturers are off in some areas. Upholstery spring wire volume is active and there are only limited openings on low carbon manufacturers' wire before mid-May.

## Structural Shapes . . .

Structural Shape Prices, Page 141

**Boston**—Fabricating shops are searched for wanted fill-in sizes, although in some cases over-all inventory of plain material is substantial. Some shops are buying foreign steel at prices slightly below domestic delivered prices, Boston.

**Philadelphia**—Structural shops inventories are increasing, but leave much to be desired in point of balance. Fabricators see little likelihood of a return to a normal stock position for the next few months. Currently, most shops are eating into backlog. Public financed work still dominates demand.

## Pig Iron . . .

Pig Iron Prices, Page 140

**Philadelphia**—Although basic pig iron continues in tight supply, foundry iron supply is adequate with operations at most gray iron foundries still lagging.

Colorado Fuel & Iron Corp. has appealed to the Interstate Commerce Commission for a \$19 rate on iron from its Minnequa, Colo., plant to its mill at Claymont, Del. The present combination rate on iron between these two points is \$34.48. The proposed rate of \$19 is established, the carriers, according to the deal, can expect a movement of 900 to 10,000 gross tons per month, depending upon operations at the Claymont plant.

Attention was directed in the appeal to recent establishment from Clark Island, Wash., to Claymont of a rate on pig iron of \$26.91 per gross ton, minimum weight per car of 45 gross tons. For an approximate distance of 2843 miles this rate produces savings of 43 cents per car mile. A suggested rate of \$19 from Minnequa for a distance of 1808 miles at a minimum rate of 50 gross tons per car produce revenue of 53 cents per mile, it is pointed out. Colorado Fuel & Iron claims test cars shipped from Minnequa to Claymont have averaged 57.7 gross tons per car, over the proposed 50 gross ton minimum weight proposed for this plant-to-plant movement.

**Boston**—At the current melt level most foundries are in good shape with respect to pig iron supply. Some patching slight gaps in their in-

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ventories, but pressure for tonnage is light.

**New York**—Pig iron consumption in this district shows little variation, with supply ample.

**Buffalo**—Reported easing in heavy industry is not reflected in the merchant pig iron market. Improvement in buying by smaller melters is especially encouraging.

**Pittsburgh**—Continuing slow foundry activity is reflected in the slack market for merchant pig iron.

**Cleveland**—With supplies adequate for all current needs, pressure for merchant pig iron is noticeably easier as compared with this season a year ago. The furnaces are disposing of all their tonnage, but the foundries are disposed to order only against needs in sight. Recent lifting of the inventory limit to 60 days from 30 days has not resulted in any particular pickup in consumer ordering. Despite the improved supply situation no yard piling of iron is reported by furnaces.

**St. Louis**—Pig iron market is unsettled over the prospect of early price decontrol. Profit margins are considered unsatisfactory.

**Birmingham**—Pressure for pig iron deliveries remains below peak. Merchant iron sellers are taking care of the overall demand with a little leeway here and there. Woodward Iron Co., whose No. 1 furnace at Woodward was down since Jan. 10 for relining, returned the stack to the active list Feb. 8.

**Los Angeles**—Large quantities of pig iron are quoted at \$50 per gross

ton delivered, about \$10 less than posted, and are unsettling the market for cast scrap.

## Iron Ore . . .

Iron Ore Prices, Page 147

**Cleveland**—With ice conditions on the Great Lakes less severe than usual for this time of the year, lake shippers are expecting one of the earliest openings of navigation on record. Word from the head of the lakes is that there is little ice in Lake Superior with only drift ice reported in Whitefish Bay and shallow ice in the St. Mary's river, entrance and exit to the Soo Locks. Meanwhile, stocks of iron ore at lower lake docks and furnaces are reported adequate to support capacity blast furnace operations into May.

## Tubular Goods . . .

Tubular Goods Prices, Page 145

**Cleveland**—Pipe jobbers are taking all the butt-weld and seamless tonnage they can obtain from the mills. Supplies of butt-weld are somewhat freer but seamless continues very tight. Overall supply prospects in the tubular goods are for continued strong demand right through the remainder of the year.

Reflecting further decline in the price of zinc producers of galvanized pipe last week increased their discounts to the basis of 11.50 cents per pound zinc.

**Boston**—More butt-weld tonnage is

available as distributors curtail all movements. Some direct shipment tonnage is being passed up. Butt-weld pipe prices are softening at the distributor level, jobbers frequently offering tonnage 10 per cent off list.

**Pittsburgh**—Additional tonnage small-diameter pipe is being made available to the trade by the A. Evers Co., shipments in sizes 2-inch to 10-inches in diameter, being made by this producer within the 45 day lead time on rated orders.

## Scrap . . .

Scrap Prices, Page 148

**Philadelphia**—Once price controls are lifted, it appears likely there will be a firming up on the better grades of open-hearth steel scrap with easing in secondary grades. Some leaders believe there will be a return to the differential system which ruled before present schedules were set up. Currently, there is no differential between No. 1 heavy melting and No. 2 heavy melting or No. 1 bundles. While, with the lifting of controls there may be no higher price for No. 1, a differential of at least \$1 under No. 1 may develop on the latter two grades. European sellers of steel scrap are feeling out the market in this country with a view to developing some business. Cast grades continue easy with No. 1 cupola cast now quotable at \$44 to \$45 a ton.

**Boston**—Steel scrap consumers can buy ample tonnage at ceiling prices, but some are holding down purchases to bare inventory levels.

**New York**—Scrap brokers' prices are unchanged with tonnage moving steadily, but reflecting little consumer pressure.

**Buffalo**—No outstanding changes are expected in the scrap market as government controls are lifted. On minor price adjustments on the upside are looked for in quality steel grades.

**Pittsburgh**—Until the mills' inventory position deteriorates, activity in the scrap market is expected to be slow. Electric furnace and better grades of open-hearth scrap are the most liquid items.

**Washington**—Stocks of purchased scrap held by consumers at the end of November, latest month for which data are available, totaled 4,987,390 gross tons, according to the Bureau of Mines. This was a slight decrease for the second consecutive month but the total was 2,159,266 gross tons greater than on June 1, 1952.

**Chicago**—Should scrap prices be decontrolled soon, little change would likely occur in cast scrap prices, already depressed. In steel scrap there could be a few advances. Better grades of heavy melting steel now involve springboards of about \$2.50 per ton, and this might be reflected in a corresponding boost.

**St. Louis**—Premium scrap grades continue in good demand but there is a marked fall-off in secondary items. Brokers attribute this to near-term price uncertainty. Mills, however, are taking all the melting steel they can get for 30-day shipments.

**Birmingham**—Some pickup in the movement of heavy melting steel

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points in the east is reported. Cast grades continue slow.

**Los Angeles**—The scrap market is in the doldrums. Prices of steelmaking grades have declined \$2 and some mills are out of the market altogether. The cast market is weaker. Offerings of foundry material are being made at \$5 less than ceiling without acceptance.

**San Francisco**—The present level of scrap prices is regarded as somewhat shaky. The market is described as "full" and there is some indication steel mills are cutting down on purchases.

**Seattle**—Foundries report normal seasonal activity. All materials are in good supply. Cast iron scrap supply exceeds current demand, going prices ranging from \$35 to \$40. One broker reports sales of cast iron at \$42.50. Bundles are slightly firmer, being quoted above \$29. The Navy is offering another lot of 1000 tons of heavy melting.

### Warehouse . . .

Warehouse Prices, Page 147

**Chicago**—Statements that warehouse inventories are back to 60 per cent of normal compared with 30 per cent at end of the steel strike are true, but they are grossly misleading to consumers. Tonnage-wise, over-all stocks have improved to this degree. But product-wise it just isn't so.

**Boston**—Lack of balance in stocks hampers warehouse business but more steel is coming in from the mills. Galvanized sheets, small sizes of carbon bars, nails, cold-rolled strip and narrow plates are in improved supply. But heavy plates, large size bars, structurals and cold-rolled sheets are in insufficient tonnage to meet demand.

**Philadelphia**—Warehouse inventories are up compared with a few weeks ago, but there is still a definite lack of balance in such items as plates, shapes, hot-rolled bars, and hot and cold-rolled sheets.

**Pittsburgh**—Some warehouse customers claim they don't have much work ahead, and are easing up on their demands. Generally, warehouses are enjoying good business, but a slowing up is expected.

**Cleveland**—Some warehouses are not getting in hot and cold-rolled sheet tonnage in the volume they had anticipated. As a result, supply conditions in the light, flat-rolled items at the warehouse level continue stringent. Large bars also continue scarce and the same is true of heavy plates. Smaller sizes of bars are noticeably improved.

### Canada . . .

**Toronto, Ont.**—Canadian production of iron and steel in 1952 set new records, and with new units already operating and more coming into production over the next couple months further gains in output are indicated for 1953.

Production of steel ingots and castings last year was 3,721,692 net tons comparing with 3,567,361 in 1951 and 3,384,131 in 1950. December output of 319,684 net tons compared with 308,626 in November, and with 296,545 in December, 1951.

Pig iron production in 1952 rose to

since 1931

## AVAILABLE: HIGH CALIBRE PRODUCTION ENGINEERS

Pioneer has been able to attract and hold the highest calibre production engineers by eliminating the high peaks and deep valleys of employment, substituting variety for repetitiousness, challenges for stagnation.

This is a major reason why Pioneer can so consistently cut both cost and time of re-tooling, improve product designs for easier, lower-cost manufacture and devise new techniques that lower the break-even point.

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perforating company**  
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NEXT time you replace the buckets on your elevator, check into the money-saving advantages of Link-Belt Cast Buckets. You'll find their accurate balance and advanced design pay off in proper filling, clean discharge.

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TOOL COMPANY**  
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2,065 tons from 2,552,696 in 1951  
2,309,732 in 1950. Output in-  
ed 2,064,357 tons of basic, 220,-  
tons of foundry and 397,147 tons  
malleable iron.

## STRUCTURAL SHAPES . . .

### STRUCTURAL STEEL PLACED

tons, state bridge, Ontario county, New  
York, through Johnson, Drake & Piper, gen-  
eral contractors, to Ernst Iron Works Inc.,  
Albion.

tons, hospital, Franklin D. Roosevelt  
at 70th St., New York, through Ver-  
nya Brown, general contractor, to Harris  
Structural Steel Co., that city.

tons, bridge, Washington state, Cowlitz  
River, reported awarded Poole, McGonigle &  
Cook, Portland; general contract to Peter  
Swit & Sons, Longview, Wash.

tons, warehouse, Maguire Air Field, Fort  
W., N. J., to Bethlehem Steel Co., Bethle-  
hem, Pa.

tons, Consolidated high school, Parkland  
School District Authority, Selinsville, Pa.,  
Bethlehem Contracting Co., Bethlehem,

tons, 15-story office building, 720 Fifth  
Ave., Realty Corp., 5th Ave. at 56th St.,  
New York, to Bethlehem Steel Co., Bethle-  
hem, Pa.

tons, plant building, Container Division,  
International Paper Co., Los Angeles, to  
Consolidated Western Steel Corp., that city.

tons, Dupont research laboratory, Kins-  
ley, N. C., to Bethlehem Fabricators, Beth-  
lehem, Pa.

tons, state bridge, Erie county, New York,  
through Johnson, Drake & Piper, general  
contractor, to Ernst Iron Works Inc.,  
Albion.

tons, state bridge work, Bronx, New  
York city, through Delma Engineering Corp.,  
general contractor, to American Bridge Di-  
vision, U. S. Steel Corp., Pittsburgh.

tons, state bridge work, Newark, through  
L-Doreo Contracting Co., general contrac-  
tor, to Bethlehem Steel Co., Bethlehem, Pa.

tons, exchange division, New Jersey Bell  
Telephone Co., Morristown, N. J., to the  
Johnson Structural Iron Works, Jersey City,  
N. J.

tons, junior high school No. 216, Queens,  
New York, to Simon Holland & Son Inc.,  
Brooklyn.

### STRUCTURAL STEEL PENDING

tons, steel H-piles, Hoboken, N. J., piers;  
is Feb. 16, Port of New York Authority,  
New York.

tons, The Dalles, Columbia river power  
plant; bids Apr. 1 to U. S. Engineer, Port-  
land, Oreg.

tons, state highway bridges, Amesbury-  
Duxbury, Mass.; A. V. Taurasi Co., Inc.,  
Amesbury, Mass., low.

tons, manufacturing plant, New Haven,  
Conn., Westcott & Naples Co., New Haven,  
general contractor.

tons, state highway and bridges, Bridg-  
water and Raynham, Mass.; J. F. Fitz-  
gerald Construction Co., Boston, low  
16,235.

## REINFORCING BARS . . .

### REINFORCING BARS PLACED

tons, Columbia Point, housing project,  
Boston, to Bethlehem Steel Co., Bethlehem,  
; John Bowen Construction Co., Boston,  
general contractor.

tons, traffic-maintenance building, route  
Wellesley, Mass., to United States Steel  
Div., U. S. Steel Corp., Cambridge;  
Inter Construction Co., Brookline, Mass.,  
general contractor.

tons, Washington state Cowlitz river  
bridge, to Northwest Steel Rolling Mills,  
Seattle; Peter Kiewit & Sons, Long-  
view, Wash., general contractors.

tons, housing project, New Bedford,  
Mass., to Joseph T. Ryerson & Son, Inc.,  
Bridgeport; Pratt Construction Co., Boston,  
general contractor; Hub Steel & Iron Works,  
ston, structural steel.

### REINFORCING BARS PENDING

0 tons, substructure, The Dalles power-  
plant, Columbia river; bids Apr. 1, to U. S.  
Engineer, Portland, Oreg.

190 tons, four reinforced concrete bridges,  
Bourne-Sandwich-Barnstable, Mass.; Camp-  
anella & Cardi Construction Co., Hillsdale,  
R. I., general contractor.

110 tons, Washington state highway projects,  
Grays Harbor and Clark counties; bids to  
Olympia, Feb. 24.

110 tons, Garden State Parkway, contract  
No. 19, section 7, Monmouth county, N.J.,  
bids Mar. 2; also 62,000 square feet, steel  
sheet piling; also bids will be opened Feb.  
26 on 21,000 square feet of steel sheet piling  
for contract 18, Section 7 of the parkway.

## PLATES . . .

### PLATES PLACED

10,000 tons, 12 tanks, Reserve Terminal Corp.,  
Perth Amboy, N. J., to Bethlehem Steel Co.,  
Bethlehem, Pa.

3500 tons, municipal water main, Queens, New  
York city, through Oakhill Contracting Co.,  
Inc., general contractor, to Alco Div.,  
American Locomotive Co., Schenectady,  
N. Y.

1300 tons, two oil tanks, Delaware River  
Terminal Co., Philadelphia, to Bethlehem  
Steel Co., Bethlehem, Pa.

550 tons, storage tanks, New Haven terminal,  
New Haven, Conn., to the Bethlehem Steel  
Co., Bethlehem, Pa.

400 tons, oil storage tank, Philadelphia Gas  
Works Division, United Gas Improvement  
Corp., Philadelphia, to Chicago Bridge &  
Iron Co., Chicago.

165 tons, 1,500,000 gallon standpipe, New York  
Water Service Corp., Rochester, N. Y., to  
Bethlehem Steel Co., Bethlehem, Pa.

### PLATES PENDING

750 tons, 236 tanks, 500-barrel capacity each;  
bids Feb. 17, Bureau of Yards & Docks,  
Port Hueneme, Calif.

500 tons, The Dalles powerhouse, Columbia  
river; bids to U. S. Engineer, Portland, Apr.  
1.

125 tons, 440 tanks, 25-barrel capacity each,  
bolted; bids Feb. 23, Bureau of Yards &  
Docks, supply officer, Port Hueneme, Calif.

100 tons, 150,000-gallon elevated water tank,

Palm Beach International Airport, Florida,  
Whitmire Tank Co., Jacksonville, low  
\$61,495.

## PIPE . . .

### CAST IRON PIPE PLACED

250 tons, various sizes, to Pacific States Cast  
Iron Pipe Co., Portland, Oreg., by Van-  
couver, Wash.

### CAST IRON PIPE PENDING

300 tons, The Dalles powerhouse project, Co-  
lumbia river; bids to U. S. Engineer, Port-  
land, Oreg., Apr. 1.

150 tons, 10 and 6-inch, District No. 20,  
Seattle; contractor's job; bids in.

### STEEL PIPE PENDING

500 tons, various sizes, The Dalles dam project,  
Columbia river; bids to U. S. Engineer,  
Portland, Oreg., Apr. 1.

## RAILS, CARS . . .

### LOCOMOTIVES PENDING

Marietta Transportation Corps depot, Marietta,  
Pa., six 80-ton diesel electric; bids Feb.  
16; also six 48-ton diesel electric, bids Feb.  
18.

New York Central, diesel locomotive units for  
1954 delivery at a cost of about \$20 million,  
inquiry out shortly.

### RAILROAD CARS PLACED

L & N. railroad placed 1000 box cars with  
Bessemer plant of the Fulmar Standard  
Car Mfg. Co., Birmingham, Ala.

L & N. railroad placed 1000 cars, divided  
between Pressed Steel Car Co., Mt. Vernon,  
Ill., and Bethlehem Steel Co., Johnstown,  
Pa.

### RAILROAD CARS PENDING

Pacific Fruit Express Co., 200 fifty-foot re-  
frigerator cars, pending.  
Savannah & Atlanta, 200 freight cars; di-  
rectors have authorized purchase.

Strip in single or multiple strands up to a total width of 54" may be bright annealed or normalized, continuously, in this EF gas fired radiant tube installation. Capacity 7200 lbs. per hour.

We are in position to design, build and put in operation: continuous strip lines for hot or cold rolled, high or low carbon, stainless, silicon, tinplate, aluminum, brass, bronze or any other ferrous or non-ferrous strip—for bright annealing, normalizing, galvanizing, aluminizing, tinning or any other process. No job is too large or too unusual.

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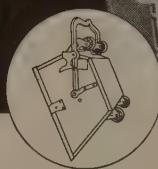
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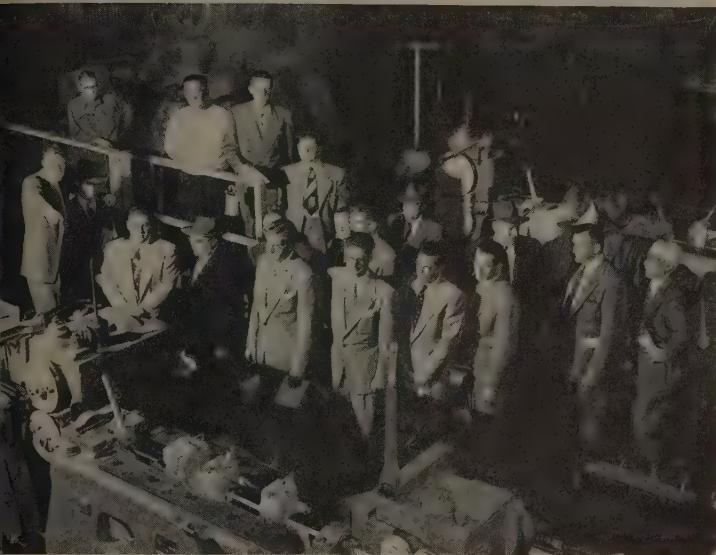
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# Metalworking Notes



## es Staff Sees Everything from Nuts to Bolts

order to obtain a thorough understanding of operational methods and facilities of bolt and nut specialties, salesmen and other personnel of Bethlehem Pacific Coast Steel Corp. take a conducted training tour of the company's three bolt and nut plants in South San Francisco, Los Angeles and Seattle. A portion of the Los Angeles sales staff is shown above inspecting a  $\frac{3}{4}$ -inch boltmaker

## umel Opens Branch Warehouse

umel Steel & Aluminum Co., Waukegan, Ill., opened a branch warehouse, in Bridgeport, Conn. Paul R. Lerner, vice president, is in charge of the company's eastern operations. Ivan I. Ingram, formerly manager of the cold-rolled strip steel department, is office manager of this branch. Bruce Osborne Jr. is manager of the Minneapolis branch sales, succeeding Edward P. O'Hara. He is now assistant to the executive vice president. A branch warehouse will be built soon in Indianapolis.

## Reduction To Build Plant

Reduction Sales Co., New York, will construct a liquid oxygen plant at Teteron, N. J. The plant also will produce nitrogen and argon. Several million dollars will be invested in this plant and its related facilities.

## ce Machine Completes Plant

ce Machine Co., Elizabeth, N. J., completed construction of a plant for general tooling and production. The company is engaged in die machine, manufacture, tool die making, light assembly and

machining. I. George Seget is president.

## Ford Opens Truck-Rail Terminal

Ford Motor Co.'s pool truck operations were transferred to its new truck-rail terminal at 3936 Lonyo Rd., Detroit.

## Kellogg Expands on West Coast

M. W. Kellogg Co., New York, subsidiary of Pullman Inc., established warehousing facilities for plastic molding powders at Vernon, Calif.

## Tool Steel Seller Opens Office

A. Milne & Co., New York, tool steel distributor, established a sales office at 833 E. Kilbourn St., Milwaukee, under the management of George H. Joch.

## Factory for Chrome Furniture

Certified Chrome Furniture Co., Los Angeles, will build a \$1,750,000 factory near Los Angeles International Airport to consolidate production of chrome furniture.

## Foxboro Opens Branch Office

Foxboro Co., Foxboro, Mass., manufacturer of industrial instruments for measurement and control, opened



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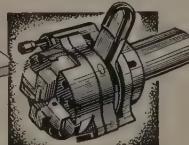
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branch office at 2207 S. Pinecrest, Wichita, Kans.

### White Opens West Coast Facilities

White Motor Co., Cleveland, opened its West Coast headquarters building at Fifth and Brannan Streets, San Francisco.

### Rust-Oleum Appoints Distributor

Rust-Oleum Corp., Evanston, Ill., manufacturer of rust preventives, appointed Industrial & Farm Equipment Corp., Chester, Pa., as a distributor.

### Chiksan Expands Facilities

Expansion of Chiksan Co.'s plant in Brea, Calif., is under way to increase office area and warehouse and assembly facilities.

### Parkview Metal Moves Factory

Parkview Metal Products Inc. moved its offices and factory to 11 W. Armitage Ave., Chicago 39.

### Roofing Plant Attains Peak Output

Cross crimped aluminum roofing is now in full production at Quaker State Metals Co.'s plant in Mountain, Pa.

### General Ltd. To Build Filter Plant

A \$150,000 plant will be built at Galtford, Ont. by Fram (Canada) Ltd., Canadian subsidiary of Fram Inc., manufacturer of filters for automotive and engine uses. Construction of the 24,000 sq ft plant is expected to be completed within six months.

### General Electric Leases Syracuse Plant

General Electric Co. leased 18,000 ft of floor space in Syracuse, N.Y., for its components department. The new location will house the department's engineering laboratory and provide space for small pilot lines which production techniques will

be studied for manufacture of components of electronics equipment.

### Gisholt Machine Moves Branch

Gisholt Machine Co., Madison, Wis., manufacturer of turret and automatic lathes, balancing machines, super-finishing, turn mills, etc., moved its Chicago sales office to 6920 W. North Ave., that city.

### Warwick Co. Moves Offices

Warwick Co., sales representative for H. & H. Tube & Mfg. Co., Detroit, and Sheet Aluminum Corp., Jackson, Mich., moved its offices to 5306 W. Lawrence Ave., Chicago.

### Cleco Appoints Distributors

Cleco Division, Reed Roller Bit Co., Houston, appointed as distributors in their respective territories: H. B. Bighouse Co., Newark, N. J.; Nixon Machinery Co., Nashville, Tenn.; Swing Machinery & Equipment Co., San Antonio, Tex.; and San Antonio Machine & Supply Co., Waco, Tex. Cleco manufacturers air tools and accessories.

### Boiler Maker Appoints Distributor

Orr & Sembower Inc., Reading, Pa., manufacturer of boilers, appointed Combustion Equipment Co., Chicago, as its distributor in that territory.

### M. L. Abrams Moves Office

M. L. Abrams Co. moved to 1841 Prospect Ave., Cleveland. The company offers new, used and remanufactured printing machinery and supplies.

### Warner Electric Appoints Agent

Warner Electric Brake & Clutch Co., Beloit, Wis., appointed Charles W. Carter Co., Los Angeles, as West Coast distributor for its Automotive division.

### Develops New Moisture Conditioner

Admiral Corp., Chicago, reported development of a "two way" moisture conditioner which increases the humidity content in the home in winter and lowers it in summer.

### Completes Abrasive Plant

American Wheelabrator & Equipment Corp., Mishawaka, Ind., completed construction of a plant designed for manufacture of a new blast cleaning abrasive.

### Draws Plans for Expansion

Dalmo Victor Co., San Carlos, Calif., an electronics firm, completed construction plans for a plant addition to house a military equipment test laboratory.

### Canadian Firm Enters U. S.

General Engineering Co. Ltd., Toronto, Canada, announced the open-

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PRODUCTION  
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## Let It Snow, Let It Snow

To eliminate the "quick freeze" effect of snow storms blowing off Lake Erie, Security Peoples Trust Co., Erie, Pa., had Scobell Co., Erie, design and install a sidewalk heating system. Made of A. M. Byers Co., Pittsburgh, wrought iron pipe, the system will keep 2300 square feet of sidewalk clear of dangerous ice and snow and will eliminate costly snow removal equipment

ing of GECO Inc. with offices in Cleveland.

## Miller Dial Finishes Building

Miller Dial & Name Plate Co., El Monte, Calif., maker of metal, plastic and phenolic dials, completed construction of a \$300,000 factory-office building.

## Magnets for Small Users

Magnets are being stocked in packaged quantities for the small user and are available at new lot prices for the first time, the Carboley Department of General Electric Co. announces.

## Plant for Lathe Chucks

Skinner Chuck Co. completed its plant in New Britain, Conn. It provides facilities for production of lathe chucks and machine vises for machine tools.

## Fluor Corp. Gets AEC Contract

The Atomic Energy Commission awarded Fluor Corp. Ltd., Los Angeles, a contract for design and engineering of a \$29 million explosive processing and assembly plant near Macomb, Ill.

## B&W To Build Plant

Babcock & Wilcox Co., New York, purchased a site near Wilmington, N. C., for a \$2 million plant for con-

structing boilers and related equipment.

## Judd Industries Formed

Charles H. Judd formed Judd Industries Inc. to specialize in small, progressive stampings. Offices are located at 3148 W. 32nd St., Cleveland.

## Office Space Leased

Calumet & Hecla Inc., metal producer and fabricator, leased quarters for its executive offices at 122 S. Michigan Ave., Chicago.

## Apex Forms New Company

Apex Smelting Co. formed National Metallurgical Corp. to construct and operate its pilot plant at Springfield, Oreg., for production of aluminum-silicon metal from clays.

## Wins J. E. Johnson Award

Charles M. Squarcy, assistant superintendent of blast furnaces at Inland Steel Co.'s Indiana Harbor, Ind., Works, was named recipient of the J. E. Johnson Jr. award for meritorious service to the iron and steel industry.

## Reuland To Build in Michigan

Reuland Electric Co., Alhambra, Calif., manufacturer of electric motors and magnetic brakes, will build a factory on a site between Detroit and Lansing, Mich.

## Solar Steel Buys Company

Solar Steel Corp., Cleveland, purchased the business of United Steel Products Inc., Worcester, Mass.

## Plant Being Modernized

General Electric Co.'s receiver works in Utica, N. Y., launched a \$400,000 modernization program. Some 8000 square feet of floor space will be added.

## Plans Building on Long Island

John Hassall Inc., Brooklyn, N. Y., plans to construct a plant at Westbury, Long Island, N. Y.

## Gorden Birgbauer Honored

The Cutting Tool Manufacturers Association elected Gordon Birgbauer as president. He is president of the Super Tool Co., Detroit.

## Establishes Eastern Office

National Motor Bearing Co. Inc., Redwood City, Calif., established an office in Newark, N. J., as headquarters for a staff of sales and field engineers to serve eastern accounts.

## Plant for Carbonic Dispenser

Carbonic Dispenser Inc., producer of metal machines to dispense soft

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## FOR SALE

Roots Connersville Blower—complete with  
No. 3 Cutler Hammer—new starter \$2,000.00

C. B. S. STEEL AND FORGE

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Telephone No. Lafayette 0147

## FOR SALE:

3 40-ton used Ladles with ball and stoppers  
Rigging  
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rigging.

## CONTACT:

A. Flores, La Consolidada, S. A.  
P. O. Box 120—Tel. 497, Eagle Pass, Texas

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DETREX DEGREASER, Model DC 325-C-1, total  
capacity 130 gallons, in excellent condition  
minimum price. For information please contact

**MARDIGIAN CORP.**

14300 Tireman, Detroit 28, Mich., Tiffany 6-9171



10 to 12 ft. long  
ALL METALS  
Also Screw Machine Products to Order

**EASTERL**  
Machine Screw Co.  
New Haven, Conn.  
Makers of H & Die Heads

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3—8" x 12" United 2-High Cold Mills with  
Combination Pinion Stands and Gear Sets  
D. C. Motor Drives; Coulers.

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Cable Address "Foster Pittsburgh"

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150 H.P., B&W #10, Class H-2 Stirring  
Water Tube Boiler gas and/or oil fire  
with 42" dia. x 125 ft. x 3/16" sheet  
steel stack, also duplex boiler feed pump  
6" x 4" x 6", new 1942.

## ALSO

1 Model AX 5012-M193 KRANE K  
Serial #255844, purchased 1943. No  
transmission and new motor recently in-  
stalled.

**McCONWAY & TORLEY CORPORATION**  
Pittsburgh (1), Penna.

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AS IS

RECONDITIONED

## STANDARD GAUGE FREIGHT CARS

Box, Double Sheathed, 50-Ton Capacity

Box, Single Sheathed, 50-Ton

Gondolas, Composite, or All Steel 50-Ton and 70-Ton

Hoppers, Twin All-Steel, 50-Ton, Cross Dump

Tank, 3,000-Gallon, High Pressure

Tank, 8,000-Gallon, Coiled and Non-Coiled

Hoppers, All-Steel, 70-ton, Cross Dump

## EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

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Side Dump, 20-Yd., 40-Ton, Lift Door

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Side Dump, 30-YD., 50-TON, DROP DOOR

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Locomotive Cranes

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6,000 Gallon

8,000 Gallon

10,000 Gallon

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### Positions Wanted

RKS MANAGER. EXTENSIVE BACKGROUND IN THE MANUFACTURE OF SHEET METAL AND STEEL PRODUCTS INCLUDING MPINGS, BINS, FORMS, CABINETS, UCTURES, WELDMENTS, CODE VESSES, AND MACHINERY. EXPERIENCED IN TYPES FABRICATING EQUIPMENT, SHINE SHOP, TOOL ROOM, HEAT TREAT, ISHING, AND MAINTENANCE. EXPERT METHODS. DIRECT ALL PHASES OF RATION INCLUDING ENGINEERING, DCTION CONTROLS, PERSONNEL, PROGRAM, ETC. COLLEGE EDUCATED, CTICALLY TRAINED. WRITE BOX 633, PENTON BLDG., CLEVELAND 13, O.

EL PLANT MANAGER wishes to re-locate. nty-three years experience. Rolling Mills, Structural, Pipe and Plate Mills. Experience in Open Hearth and construction work. Supervised steel plant maintenance. Man-Steel Plant in East last four years. Write 666, STEEL, Penton Bldg., Cleveland 13, O.

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PRESS ROOM FOREMEN— ASSISTANT FOREMEN— erably with Tool & Die Experience but be strong on supervisory qualifications. West metal fabricating concern will offer opportunity to qualified men. Give full of experience, age and salary expectations. first reply. Reply Box 660, STEEL, on Bldg., Cleveland 13, Ohio.

ESTIMATOR experienced in all phases of metal fabrication, as deep drawing, forming, progressive die and eylet production. Midwest location. employment benefits. Reply Box 661, EL, Penton Bldg., Cleveland 13, Ohio.

HODS MAN—ENGINEER—knowledge met- processing industry—five to eight years ex- nce in methods work plus knowledge of analysis, time study, equipment and method analysis, work simplification techniques, su- iority experience. Head new methods divi- Send resume—state salary requirements. e Box 667, STEEL, Penton Bldg., Cleveland 13, Ohio.

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ARIED POSITIONS \$3,500 TO \$35,000. WE the original personal employment service established 43 years). Procedure of highest standards is individualized to your per- requirements. Identity covered; present ion protected. Ask for particulars. R. W. Y, INC., 110 Dun Bldg., Buffalo 2, N. Y.

### AGE NO BARRIER

We seek a man long experienced in stainless steel production who can train men to operate a continuous strip mill for hot and cold stainless steel. Unusual opportunity for someone now retired or in semi-retirement. Position for two years at least. In attractive Niagara Peninsula. Send application or resume to Robert Teasdale, Atlas Steels Limited, Welland, Ontario.

### WANTED

## ESTIMATING AND DIE DESIGN ENGINEER — DROP FORGING

Must have experience in laying out multiple impression forging dies, and estimating of forgings, five pounds and under. Some die sinking and forge shop experience preferred. Additional opportunities in management available for person with proper qualifications.

Write Box 663, STEEL,  
Penton Bldg. Cleveland 13, Ohio

## SALES ENGINEER

## GENERAL EXPERIENCE IN ELECTRICAL ENGINEERING NECESSARY WITH SPECIAL BACKGROUND IN STEEL MILL OPERATIONS

Travel Necessary  
Salary Plus Bonus Opportunity

SEND LETTER GIVING FULL  
DETAILS ON EXPERIENCE,  
GENERAL QUALIFICATIONS, AND  
SALARY EXPECTATION TO

Box 664, STEEL  
Penton Bldg., Cleveland 13, Ohio

### FOR CLASSIFIED RATES

And further information write  
STEEL, Penton Bldg., Cleveland 13, O.

### WANT TO PURCHASE

1 used 100 to 150 TON  
FORGING PRESS

CONTACT: A. Flores

LA CONSOLIDADA, S. A.

P. O. Box 120—Tel. 497, Eagle Pass, Texas

### Wanted

## MAINTENANCE SUPERINTENDENT

For ore concentration plant in Colorado. Mechanical Degree preferred but not essential. Job requires ability to organize and supervise maintenance department with the help of three maintenance foremen. Should have 8 to 10 years experience in practical equipment maintenance and supervisory work. Salary open.

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Penton Bldg., Cleveland 13, Ohio

## MECHANICAL DESIGN ENGINEERS

Positions available for Design Engineers with experience in the design of mechanical equipment used in Blast Furnaces, Open Hearth Furnaces, Sintering Plants, Rolling Mills and other auxiliary plants for the processing and production of iron and steel. These men must have experience in Steel Plant layout as well as the design of equipment involved. These are permanent positions with excellent advancement opportunities for qualified Engineers who are interested in greater accomplishment.

If you qualify and are interested in advancing with a continually expanding organization, write, giving complete resume of positions held and duties performed, education, age, salary desired, etc., to:

ARTHUR G. MCKEE & COMPANY  
2300 Chester Avenue  
Cleveland 1, Ohio

For **FAST SERVICE**  
on  
**LARGE INDUSTRIAL GEARS**

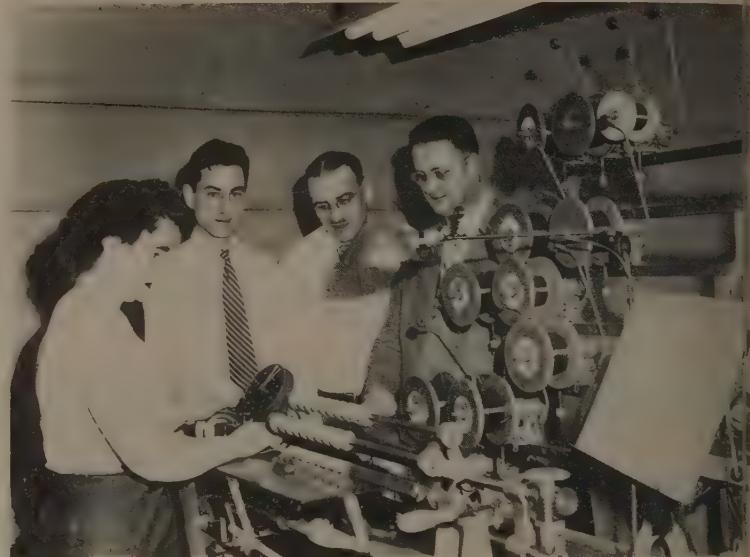
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Convenient, central location and nearly 60 years of specialized experience make SIMONDS your logical source for large industrial gears. SIMONDS GEAR is able to assure you fast, accurate service on all types and sizes—Spur Gears up to 145", Bevel Gears up to 60", Worm Gears up to 72" . . . also worms, racks and pinions. Materials include cast or forged steel, gray iron, bronze, Meehanite, rawhide and bakelite. Whether your next heavy gear need is "rush" or "regular" . . . call SIMONDS first.

Stock carrying distributor for Ramsey Silent Chain Drives and Couplings, industrial V-Belts.



**THE**  
**SIMONDS**  
**GEAR & MFG. CO.**  
LIBERTY at 25TH PITTSBURGH 22, PA.



### Femco Authorizes New European Agent

Reno-Lepaute of Paris, French manufacturer of precision apparatus, is the licensed manufacturer and sales agent for Farmers Engineering & Mfg. Co., Inc., Pa. in Europe and French possessions. Alain Bertrand, second from left, of the French firm, and company officials inspect a Femco manufacturing operation.

drinks, is ready to move into a plant and offices near Youngstown.

### \$5 Million Expansion Planned

American Welding & Mfg. Co., Warren, O., will build a 25,000-square-foot plant addition soon as part of a \$5 million expansion program.

### Algoma Plans Cold Strip Mill

Algoma Steel Corp. Ltd. plans a cold strip mill costing \$3.5 million to be built at Sault Ste. Marie, Ont.

### New Post for D. A. Rhoades

D. A. Rhoades, vice president and general manager of Kaiser Aluminum & Chemical Corp., Oakland, Calif., was elected president of the Aluminum Association.

### Change in Office Address

Iron Lung Ventilator Co. moved its general offices from 4019 Prospect Ave., Cleveland 3, to 5403 Prospect Ave., that city.

### Corporation Has New Name

Balmar Corp., Woodberry, Md., changed its corporate name to Franklin Balmar Corp.

### Plant Addition Scheduled

The ILG Electric Ventilating Co., Chicago, will build a 35,000 square-foot addition costing \$500,000.

### Adamas Names New Representative

Adamas Carbide Corp., Harrison, N. J., manufacturer of tungsten car-

bide tool tips, dies and wear parts, appointed Tool Specialists of Westbury, Long Island, N. Y., as a district sales representative.

### Mount Vernon Leases Plant

Mount Vernon Die Casting Co. leased the plant formerly occupied by the Petroleum Heat & Power Co., Stamford, Conn.

### Open House at A. M. Castle

A. M. Castle & Co., independent steel distributor, held open house to inaugurate its new steel warehouse in Rockford, Ill., Feb. 6.

### Detroit Harvester Buys Pioneer

Detroit Harvester Co. purchased the Pioneer Pump & Mfg. Co., Detroit. Detroit Harvester produces automotive parts and equipment, fan mowers and sweepers.

### Crown Opens Milwaukee Office

Crown Steel Sales Inc., Chicago, opened an office at 4256 S. Howell Ave., Milwaukee.

### To Construct New Warehouse

Edgcomb Steel Co., Philadelphia, purchased a site in York, Pa., for a steel warehouse. Construction will start immediately.

### Douglas Aircraft Plans Expansion

Douglas Aircraft Corp., Long Beach Division, Long Beach, Calif., plans to construct \$2 million worth of additional factory facilities.

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...make gloves last  
3 to 5 times **LONGER!**

BEFORE



LEATHER

How  
Much Will  
This Reduce  
Your Yearly  
GLOVE  
Cost?



AFTER

RUBBER OR COTTON

**THIS IS WHAT "WASH-RITE" DOES...**

Throw all your dirty, worn leather, rubber or cotton gloves in our steel drum. Ship to us. We correctly clean, sterilize, COMPLETELY REPAIR, sort, reshape, pair and ship them back to you as serviceable as new. Depending upon the gloves and their usage, gloves are being re-claimed by us 3 to 5 times. We specialize only in laboratory controlled re-claiming of rubber, leather and cotton gloves, aprons and clothing. Write for literature.

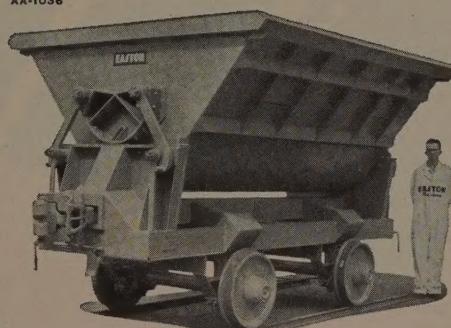
10 Years of Proven Service &

YOUR GOODS FULLY INSURED ... WORK GUARANTEED

...it costs  
you nothing  
to find out.  
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FREE TRIAL  
ORDER

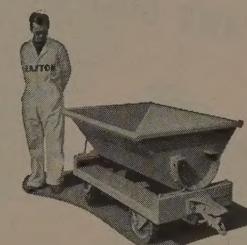
**Wash-Rite Company, Inc.**  
1412-26 CORNELL AVENUE • INDIANAPOLIS 2, INDIANA

AA-1036

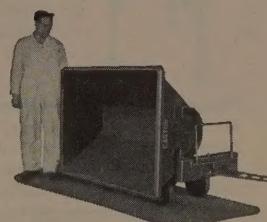


Rocker Dump Cars, gravity dump to either side.

Capacities 18 cu. ft. to 8 cu. yds.



Rocker Dump Trailers for all purposes on steel, solid rubber or pneumatic tires.



**EASTON**

**ROCKER DUMP  
Cars and Trailers**

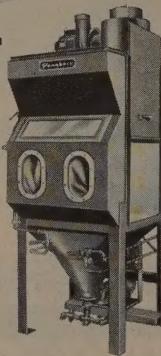
EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA. • NEW YORK • PHILADELPHIA • PITTSBURGH

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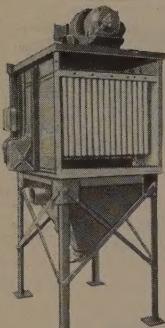
# PANGBORN SPEEDS UP PRODUCTION, LOWERS COST

WITH PRECISION  
FINISHING . . .

**Pangborn Hydro-Finish Cabinet**—Removes scale and directional grinding lines . . . holds tolerances to .0001" and prepares surfaces for painting or plating. Liquid blast reduces costly hand cleaning and finishing of molds, dies, tools, etc. Models from . . . \$1410 and up.



AND DUST CONTROL



**Pangborn Unit Dust Collector**—Traps dust at the source. Machine wear and tear is minimized, housekeeping and maintenance costs reduced. Solves many grinding and polishing nuisances and allows reclamation of valuable material. Models from . . . \$286 and up.

**Pangborn Blast Cleaning Machines** for cleaning tanks, bridges, structures quickly and economically. Portable and stationary models, 6 sizes . . . \$170 and up. Cabinet for cleaning small metal parts better and faster . . . \$319 and up.

**Write for details** on these machines to: PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment

**Pangborn**

STOCK UNITS

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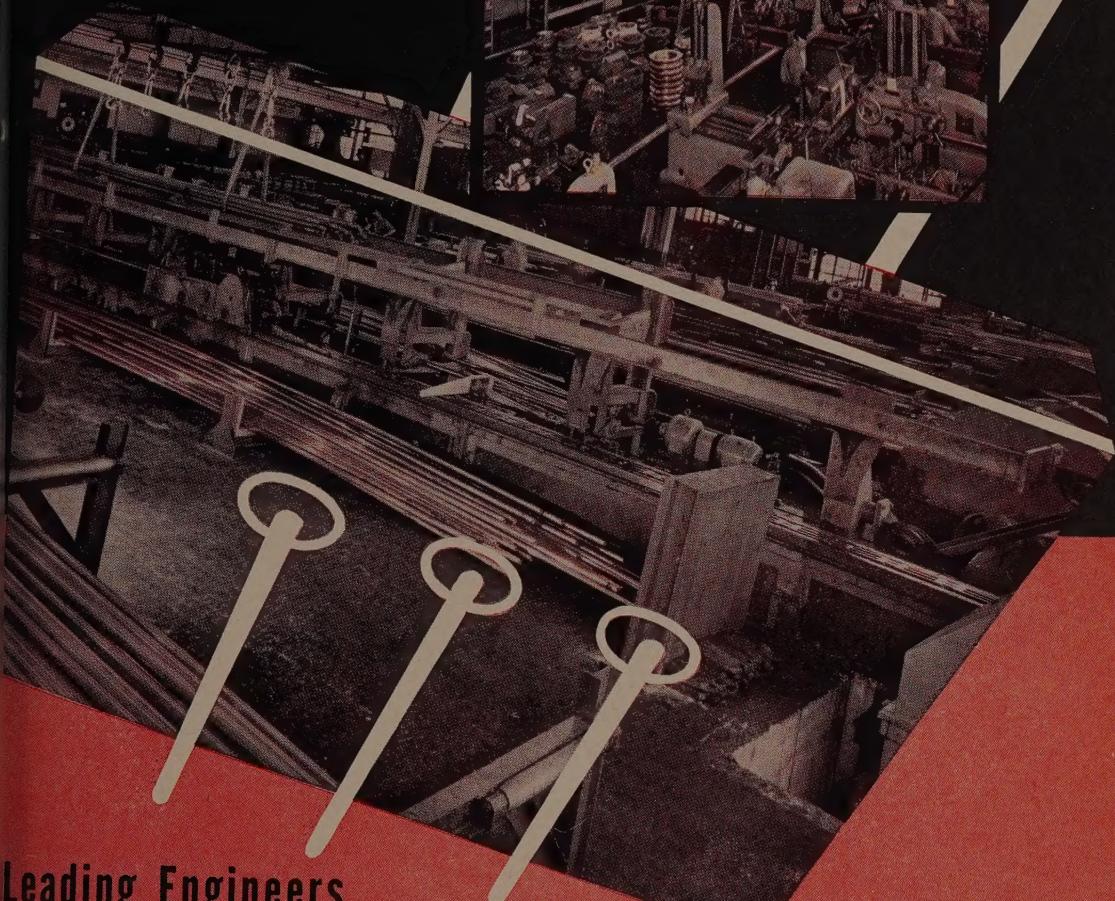
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ENGINEERING COMPANY



Leading Engineers  
and Builders of  
**DRAWBENCHES**

Aetna-Standard

AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

in Warren, Ohio • Ellwood City, Pennsylvania

**ASSOCIATED COMPANIES**

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Societe de Constructions de Montbard, Paris,  
France—France, Belgium, Holland, Luxembourg,  
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Demag Aktiengesellschaft, Duisburg, Germany—  
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Compagnia Italiana Forme Acciaio, Milano,  
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Aetna-Japan Company, Ltd., Tokyo, Japan—  
Japan.

Hale & Kullgren, Inc., Akron, Ohio—Repre-  
sentative for the Rubber Industry.

*Designers and Builders to the Ferrous*

# Rolls tubing to within one-half standard wall tolerances... with help of TIMKEN® bearing

**H**EAVY-WALL tubing can be rolled to within one-half standard tolerances on Assel type tube mills, developed by the Timken Company and built by Aetna-Standard. This type of mill is one of the most accurate rolling mills ever built for mechanical tubing.

One big reason for the mill's extreme accuracy is the Timken® tapered roller bearings on the roll necks of the three rolls.

Timken roll neck bearings take radial, thrust and combination loads without special thrust units. Chuck

mountings are simpler and more compact. Greater mill rigidity is provided because Timken bearings permit larger diameter roll necks. Load ratings are increased as much as 40%. Roll neck strength is increased 50 to 60%.

Friction within the Timken bearing itself is practically eliminated by true rolling motion and incredibly smooth surface finish. And its lower starting resistance permits mills to accelerate more rapidly.

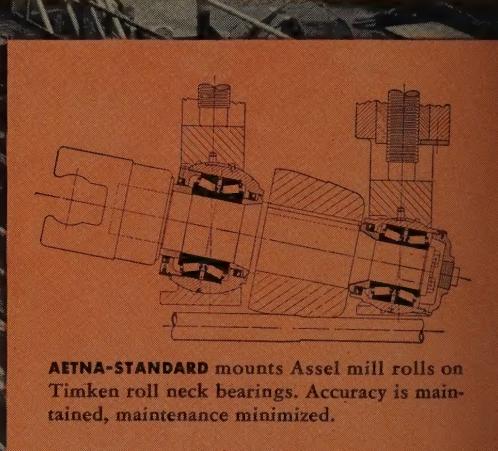
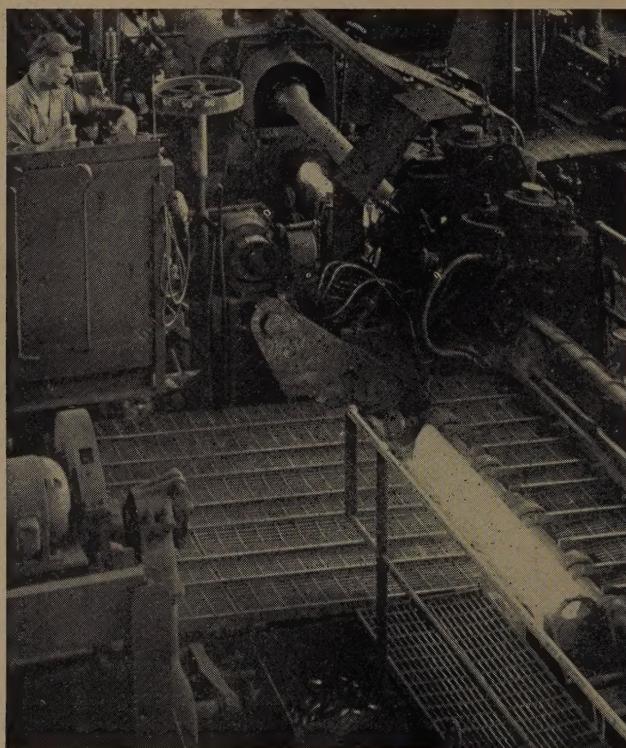
Timken bearings also eliminate complicated lubrication systems, per-

mit the use of simple and economic grease lubrication. No need for piping or tubes. Rolls can be changed faster.

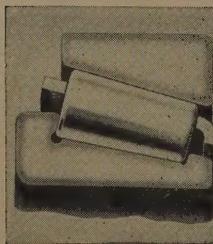
To get all these advantages in mill equipment you buy or build, sure to specify Timken tapered roller bearings. And look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant, St. Thomas, Ontario. Cable address "TIMROSCO".



This symbol on a product means its bearings are the best.



**AETNA-STANDARD** mounts Assel mill rolls on Timken roll neck bearings. Accuracy is maintained, maintenance minimized.



#### GREATER LOAD AREA

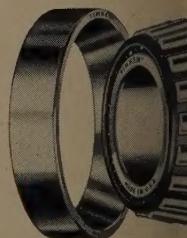
Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

# TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

**TAPERED ROLLER BEARINGS**



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION